Libra

Server MotherBoard

User Manual

Document Number: MAN-00207-A

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Safety Information

When installing, operating, or performing maintenance on this equipment, basic safety precautions, as listed below, should always be followed to reduce the risk of fire, electric shock, and personal injuries.

- **Read and understand all instructions.**
- **Observe warnings and instructions marked on the product.**
- **For proper mounting instructions, please consult the User's Manual provided with the product.**
- **Do not place this product on an unstable cart, stand or table which might cause the product to fall and sustain serious damage.**
- **Install only equipment identified in the User's Manual provided with this product. Use of other equipment might cause improper connection of circuitry that might lead to fire or personal injuries.**
- **This product should be operated only from the type of power source indicated on the marked label. If you are uncertain about the type of power supply in your area, consult your dealer or the local Power Company.**
- **Disconnect the power supply module when removing power from the system.**
- **Unplug this product from the wall outlet before cleaning. Use a damp cloth for cleaning. Do not use liquid cleaners or aerosol cleaners.**
- **Do not use this product near a water source such as a wet faucet.**
- **Never push objects of any kind into this product through open slots as they may touch dangerous voltage points or short out parts that could result in fire or electric shock. Never spill liquids of any kind on the product.**
- **Do not block or cover slots and openings in the unit as they are for ventilation to protect the unit from overheating. Do not place the product in a built-in installation unless proper ventilation is available.**
- **To reduce the risk of electric shock, do not disassemble this product. Service should only be performed by trained personnel. Opening or removing covers and/or circuit boards may expose you to electric or other risks. Incorrect reassembly can cause electric shock when the unit is subsequently used.**
- **Risk of explosion is possible if battery is replaced with an incorrect type. Dispose used batteries according to the instruction.**
- **This product is equipped with a three-wire grounding type plug, a plug with a third (grounding) pin. This plug is intended to fit only into a grounding type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace the outlet. Do not defeat the safety purpose by removing the grounding type plug. Do not use a 3-to-2 prong adapter at the receptacle. Use of this type of adapter may result in risk of electric shock and/or damage to this product.**

About This User Manual

This document provides a detailed description of the Libra including:

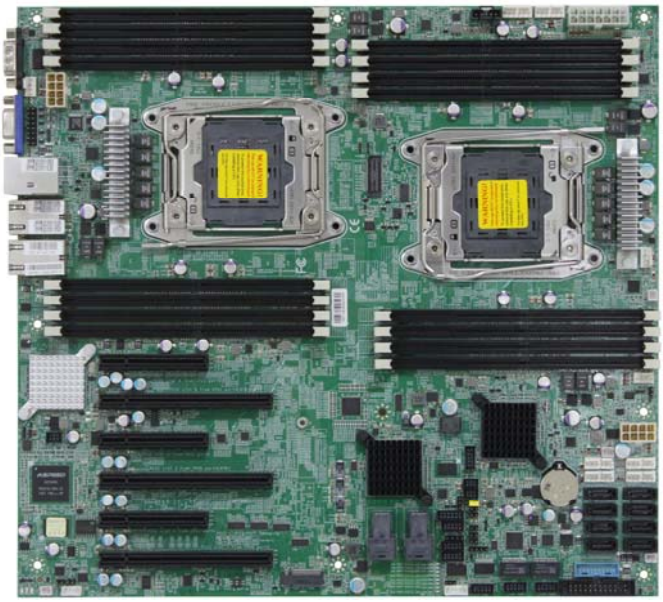
- The General Features of the Product
- Motherboard Settings
- BIOS Configuration and Settings
- BMC Configuration and Settings

Chapter 1.

Product Introduction

1.1 General Information

Libra, a server grade mother board supports two Intel® Xeon® processor E5-2600 V3 series.



1.2 Specifications

Dimensions (with chassis ears/protrusions)	
W x D	mm : 305 x 330 inches : 12 x 13
Motherboard	
Motherboard	Libra
Processor	
Processor Support	Dual LGA2011-3 (Socket –R3) to support two Intel® Xeon® processor E5-2600 V3 series
QPI/DMI Speeds	8 GT/s, 5 GT/s, 2.5 GT/s
Chipset	
Chipset Support	Intel® C612 chipset
System Memory	

System Memory	• 4 memory channels per CPU socket, 4 channels with 2DPC • 16 DIMM slots support up to: - 256GB (@4Gb) / 512GB (@8Gb) DDR4 1866/2133 RDIMM SR, DR - 512GB (@4Gb) / 1024GB (@8Gb) DDR4 2133 LRDIMM QR
BIOS	
BIOS Type	•INSYDE 16MB • SPI (Serial Peripheral Interface) FLASH Interface
BIOS Features	• EFI BIOS • ACPI • PXE • WOL • AC loss recovery • IPMI KCS interface • SMBIOS • Serial console redirection
On-Board Devices	
Serial ATA	Built-in SATA controller with RAID support on Intel® C612 chipset Support • 8 x SATA3 ports
IPMI	Aspeed AST2400 BMC • Intelligent Platform Management Interface 2.0 (IPMI 2.0) • iKVM, Media Redirection, IPMI over LAN, Serial over LAN • SMASH support
Network Controllers	• Intel®X540 10 GbE controller • Intel®I350 1GbE controller (Optional) • Intel®I210 PCIe single-port 1GbE controller • Intel®I217 1GbE PHY
Graphics	Aspeed AST2400 graphics controller • PCIe x1 VGA/2D controller • 1920x1200@60Hz 32bpp
Rear I/O	
LAN	2 x RJ45 single ports(10 GbE / 1 GbE) 1 x RJ45 dual ports
USB	1 x USB ports
VGA	1 x VGA port
Serial Port	1 x external DSUB-9 serial port
System Management	
System Management	• IPMI 2.0 compliance • iKVM support (KVM over IP) • Media redirection • Smart fan speed control • Remote power on/off/reset • Temperature, fan, voltage, PSU sensor monitor • System ID / System fail indicator • SEL message alarm through mail • SNMP support • Intel NM
Operating Environment	
Environmental Specifications	• Operating Temperature: 0 ~ 55°C • Operating Altitude Condition: 0 ~ 10K feet • Storage Temperature: -40° ~ 70°C • System Relative Humidity: 5% to 95% non-condensing

Chapter 2.

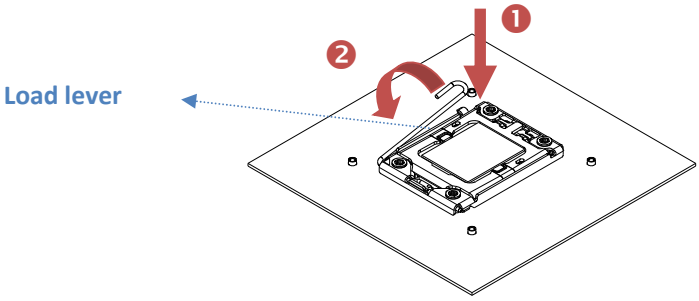
Hardware Setup

2.1 Central Processing Unit (CPU)

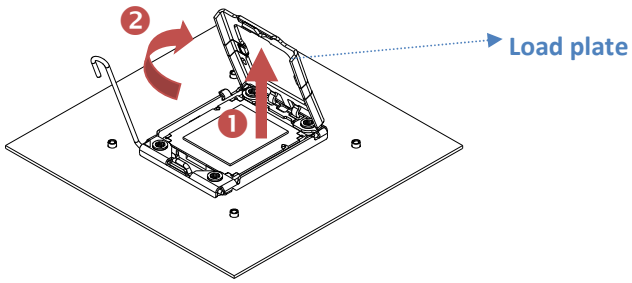
CAUTION : WHEN UNPACKING A PROCESSOR, HOLD THE PROCESSOR ONLY BY ITS EDGES TO AVOID TOUCHING THE CONTACTS.

2.1.1 Installing the CPU

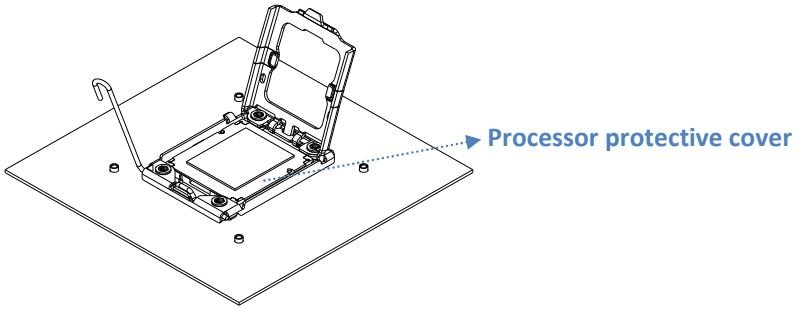
1. **Press the load lever to release the load plate.**



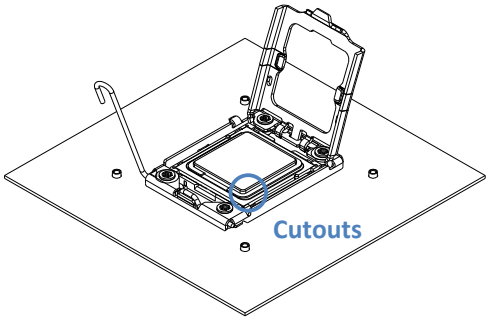
2. **Lift the load plate.**



3. **Remove the processor protective cover from CPU socket.**

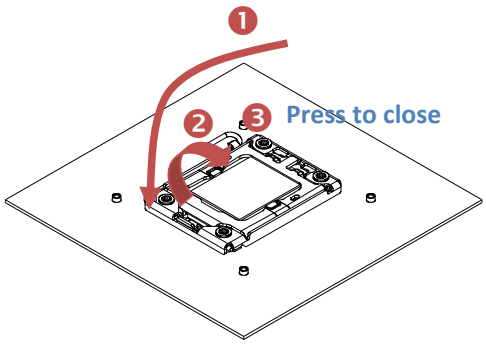


4. **Align the processor cutouts against the socket notches.**



CAUTION: THE PINS OF THE PROCESSOR SOCKET ARE VULNERABLE AND EASILY SUSCEPTIBLE TO DAMAGE IF FINGERS OR ANY FOREIGN OBJECTS ARE PRESSED AGAINST THEM. PLEASE KEEP THE SOCKET PROTECTIVE COVER ON WHEN PROCESSOR IS NOT INSTALLED.

5. **Close the load plate & load lever.**

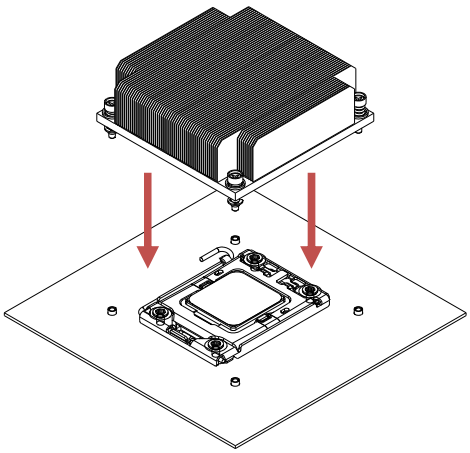


2.1.2 Installing the CPU Heatsink

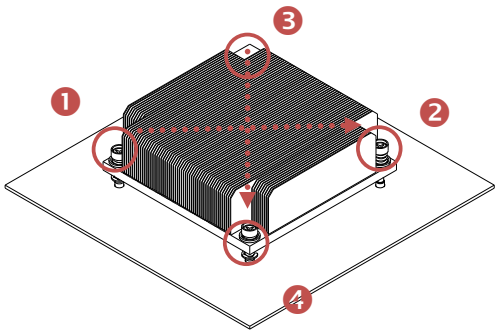
NOTE: APPLY THERMAL PASTE TO THE BOTTOM OF HEATSINK AND SPREAD IN AN EVEN THIN LAYER BEFORE INSTALLING THE HEATSINK.

To install the CPU heatsink:

1. **Place the heatsink on top of the CPU, ensuring that the four fasteners match the holes on the motherboard.**

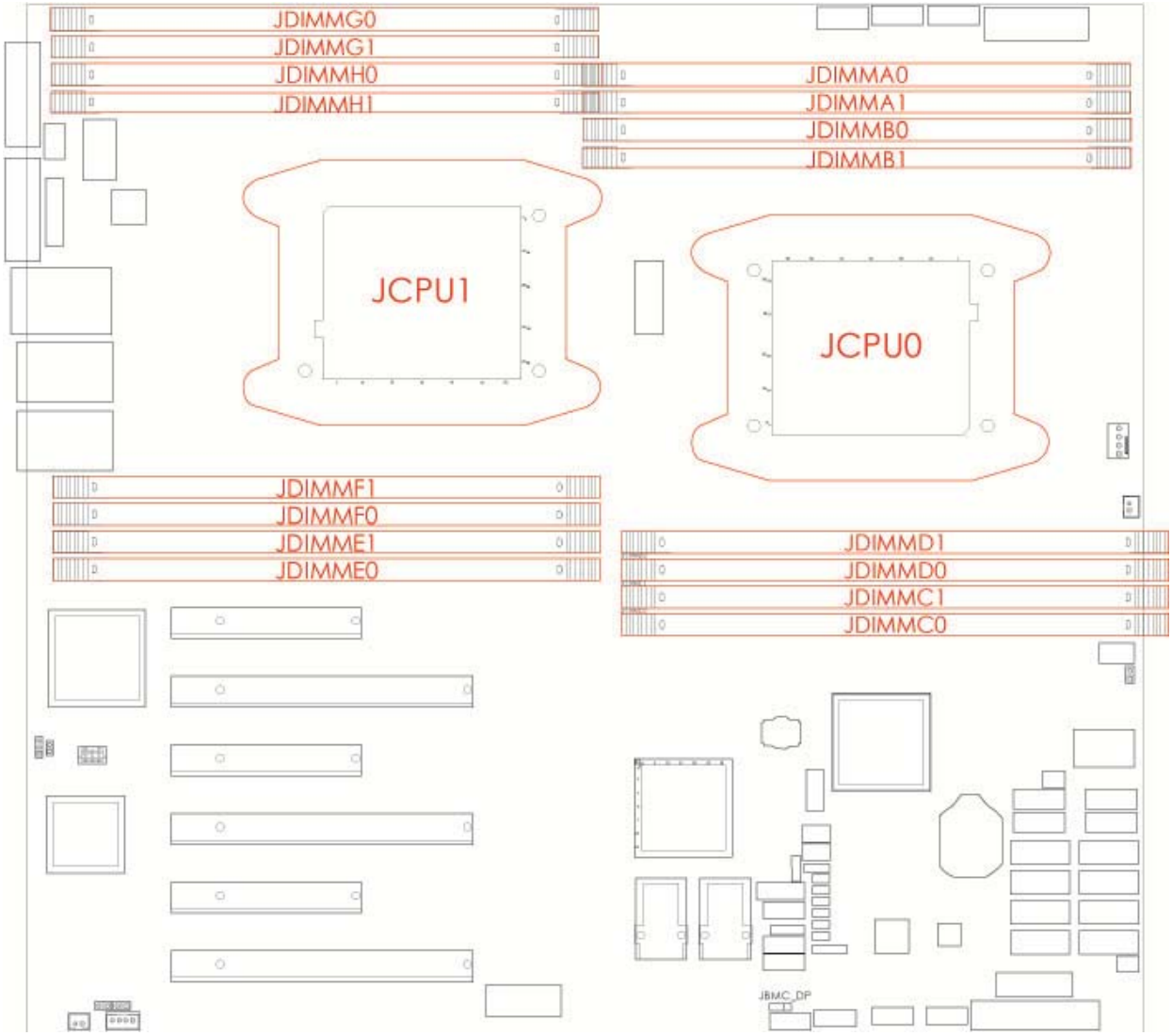


2. **Tighten the four screws in a diagonal sequence, a couple of turns at a time, until all four screws are secure and the heatsink is securely fastened to the chassis.**

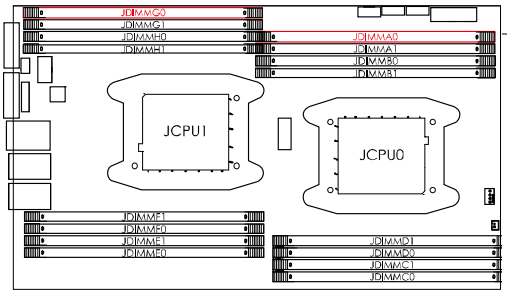
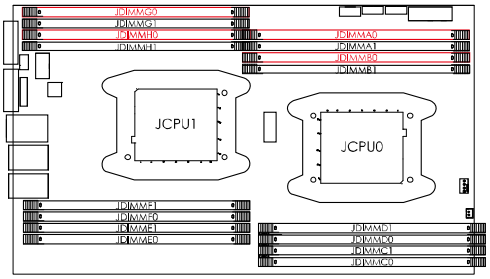
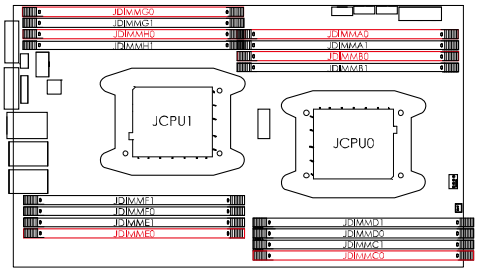
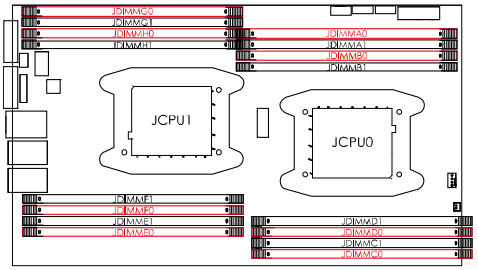
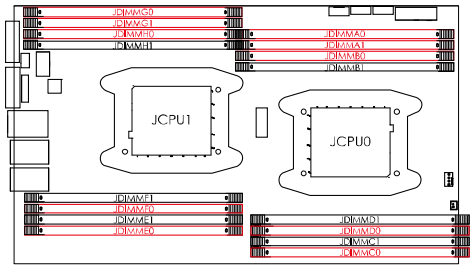


2.2 System Memory

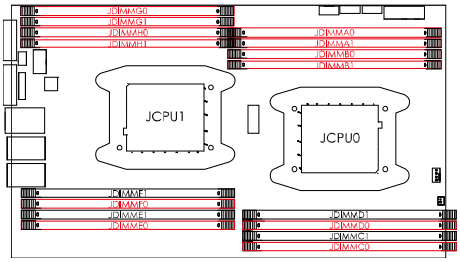
This server board supports up to sixteen DDR4 1333/1600/1866/2133 Registered ECC SDRAM(RDIMM) / Load-Reduced DIMM (LRDIMM).



1. **Populate DIMMs in the following order:**

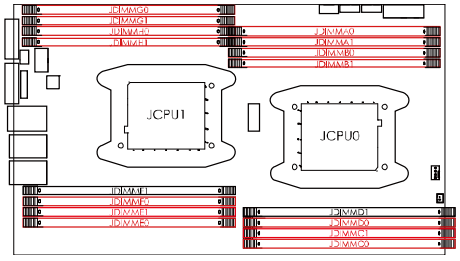
DIMM Numbers	DIMM arrangement	CPU1	JCPU0
2 DIMMs		JDIMM_G0	JDIMM_A0
4 DIMMs		JDIMM_G0 JDIMM_H0	JDIMM_A0 JDIMM_B0
6 DIMMs		JDIMM_G0 JDIMM_H0 JDIMM_E0	JDIMM_A0 JDIMM_B0 JDIMM_C0
8 DIMMs		JDIMM_G0 JDIMM_H0 JDIMM_F0 JDIMM_E0	JDIMM_A0 JDIMM_B0 JDIMM_D0 JDIMM_C0
10 DIMMs		JDIMM_G0 JDIMM_G1 JDIMM_H0 JDIMM_F0 JDIMM_E0	JDIMM_A0 JDIMM_A1 JDIMM_B0 JDIMM_D0 JDIMM_C0

12 DIMMs



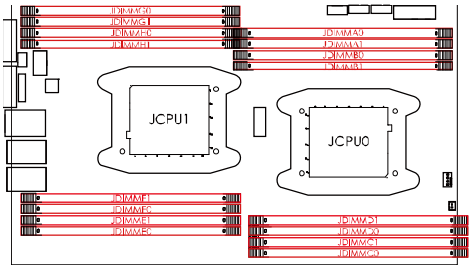
CPU1	JCPU0
JDIMM_G0	JDIMM_A0
JDIMM_G1	JDIMM_A1
JDIMM_H0	JDIMM_B0
JDIMM_H1	JDIMM_B1
JDIMM_F0	JDIMM_D0
JDIMM_E0	JDIMM_C0

14 DIMMs



CPU1	JCPU0
JDIMM_G0	JDIMM_A0
JDIMM_G1	JDIMM_A1
JDIMM_H0	JDIMM_B0
JDIMM_H1	JDIMM_B1
JDIMM_F0	JDIMM_D0
JDIMM_E1	JDIMM_C1
JDIMM_E0	JDIMM_C0

16 DIMMs

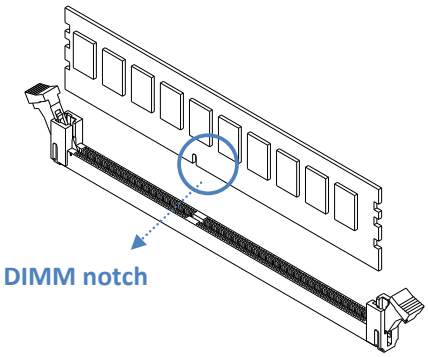


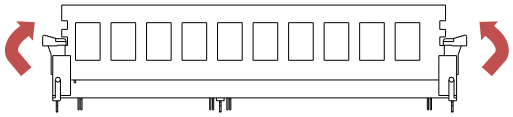
CPU1	JCPU0
JDIMM_G0	JDIMM_A0
JDIMM_G1	JDIMM_A1
JDIMM_H0	JDIMM_B0
JDIMM_H1	JDIMM_B1
JDIMM_F1	JDIMM_D1
JDIMM_F0	JDIMM_D0
JDIMM_E1	JDIMM_C1
JDIMM_E0	JDIMM_C0

2. **Unlock a DIMM socket by pressing the retaining clips outward.**

3. **Insert module vertically and press down until it snaps into place.**

NOTE: DIMM NOTCH AND SOCKET BUMP MUST ALIGN AS SHOWN.



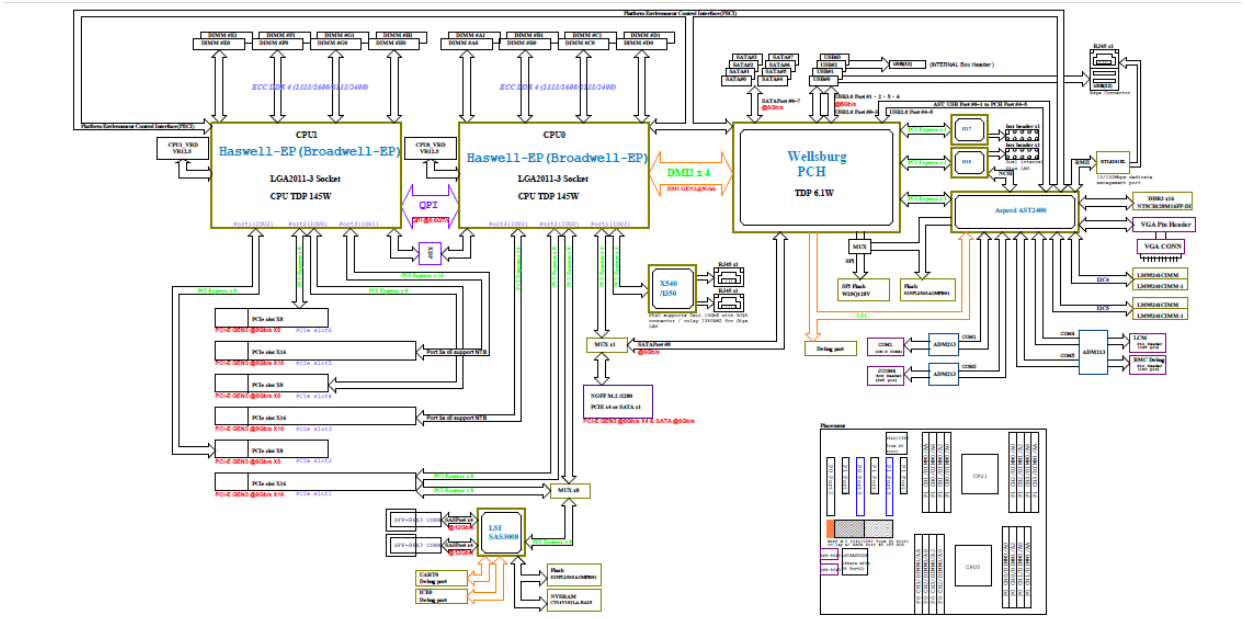


Chapter 3.

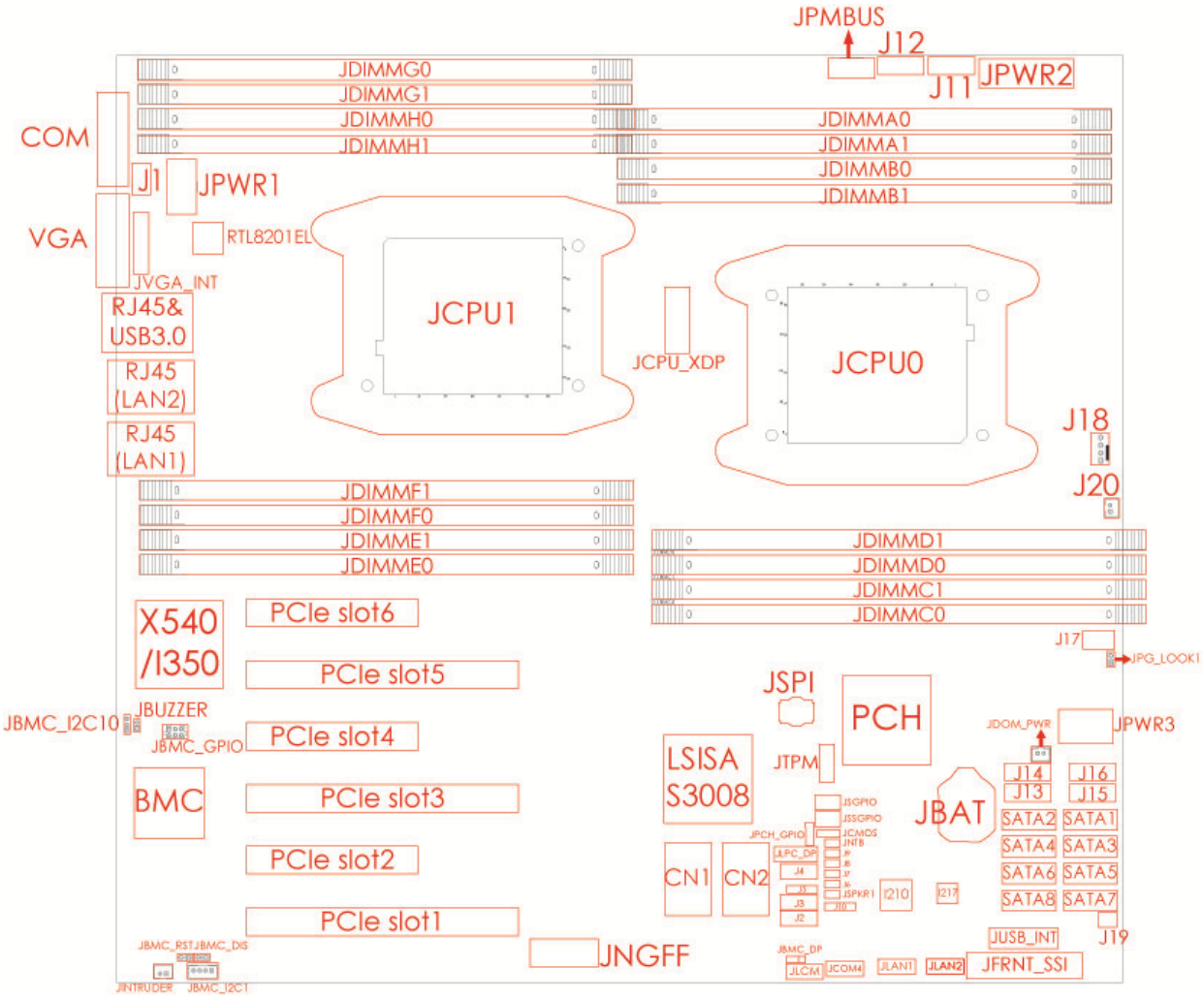
Motherboard Settings

This section describes the jumpers, internal connectors, and internal LEDs setting on Libra motherboard. Motherboard layout and important jumper settings are listed as below.

3.1 **Motherboard block diagram**



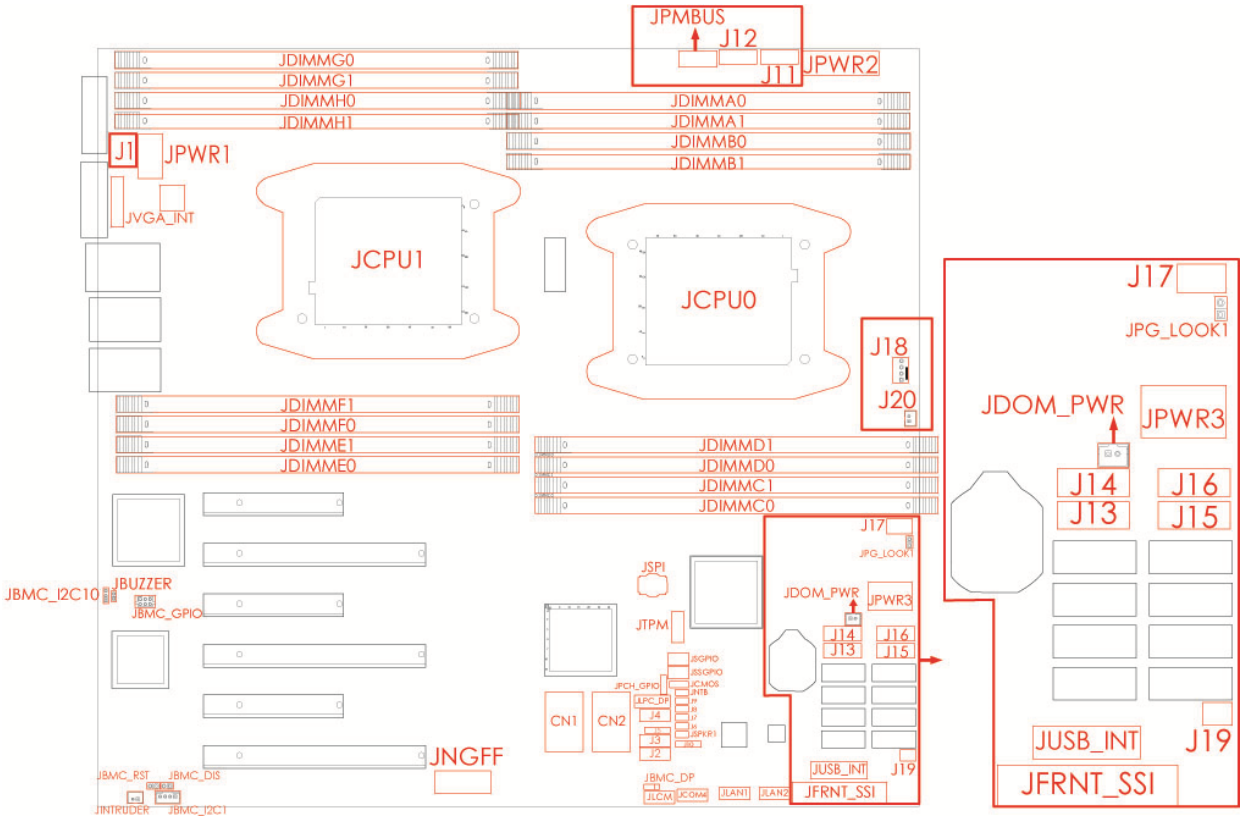
3.2 **Motherboard Layout**



3.3 **Motherboard Content List**

Connectors		Location	Connectors		Location
1	Ethernet (Single Port)	LAN1,LAN2	28	Intruder	JINTRUDER
2	Ethernet (Dual Port)	RJ45	29	PMBUS	JPMBUS
3	USB Port (Dual Port)	USB3.0	30	SPI ROM Socket	JSPI
4	COM Port	COM	31	Speaker	JSPKR
5	VGA Port	VGA	32	BMC Reset	JBMC_RST
6	Power Supply (4x2 pin)	JPWR1	33	BMC Disable	JBMC_DIS
7	Power Supply (7x2 pin)	JPWR2	34	System PG Lock	JPG_LOCK
8	Power Supply (4x2 pin)	JPWR3	35	BMC Buzzer	JBUZZER
9	SATA-DOM Power	JDOM_PWR	36	BIOS Recovery Mode	J6
10	SSI Front Panel	JFRNT_SSI	37	ME Force Recovery Mode	J9
11	Serial ATA	SATA1~ SATA4	38	Flash Descriptor Security override	J7
12	SSATA	SATA5~ SATA8	39	No Reboot(Watch Dog)	J8
13	VGA Pin header	JVGA_INT	40	NTB (Non-Transparent Bridge)	JNTB
14	COM Port	JCOM4	41	PCH GPIO	JPCH_GPIO
15	Front USB	JUSB_INT	42	LCM(COM Port)	JLCM
16	CPU XDP header	JCPU_XDP	43	LAN3/LAN4	JLAN1/JLAN2
17	CPU Sockets	CPU0/CPU1	44	SAS Drive Error LEDs	J2
18	Debug port	JLPC_DP	45	SAS Drive Active LEDs	J3
19	TPM Port	JTPM	46	SAS ICE0	J4
20	BMC debug Port	JBMC_DP	47	SAS UART0	J5
21	BMC GPIO	JBMC_GPIO	48	LAN3/LAN4 LEDs	J10
22	SGPIO	JSGPIO	49	External Thermal Sensor	J19/J20
23	SSGPIO	JSSGPIO	50	SFF-8643 CONN	CN1,CN2
24	Clear CMOS	JCMOS	51	NGFF M.2 CONN	JNGFF
25	BMC_I2C10	JBMC_I2C10	52	FIN_4P	J1,J17,J18
26	BMC IPMI	JBMC_I2C1	53	FIN_6P	J11~J16
27	Battery Socket	JBAT	54		

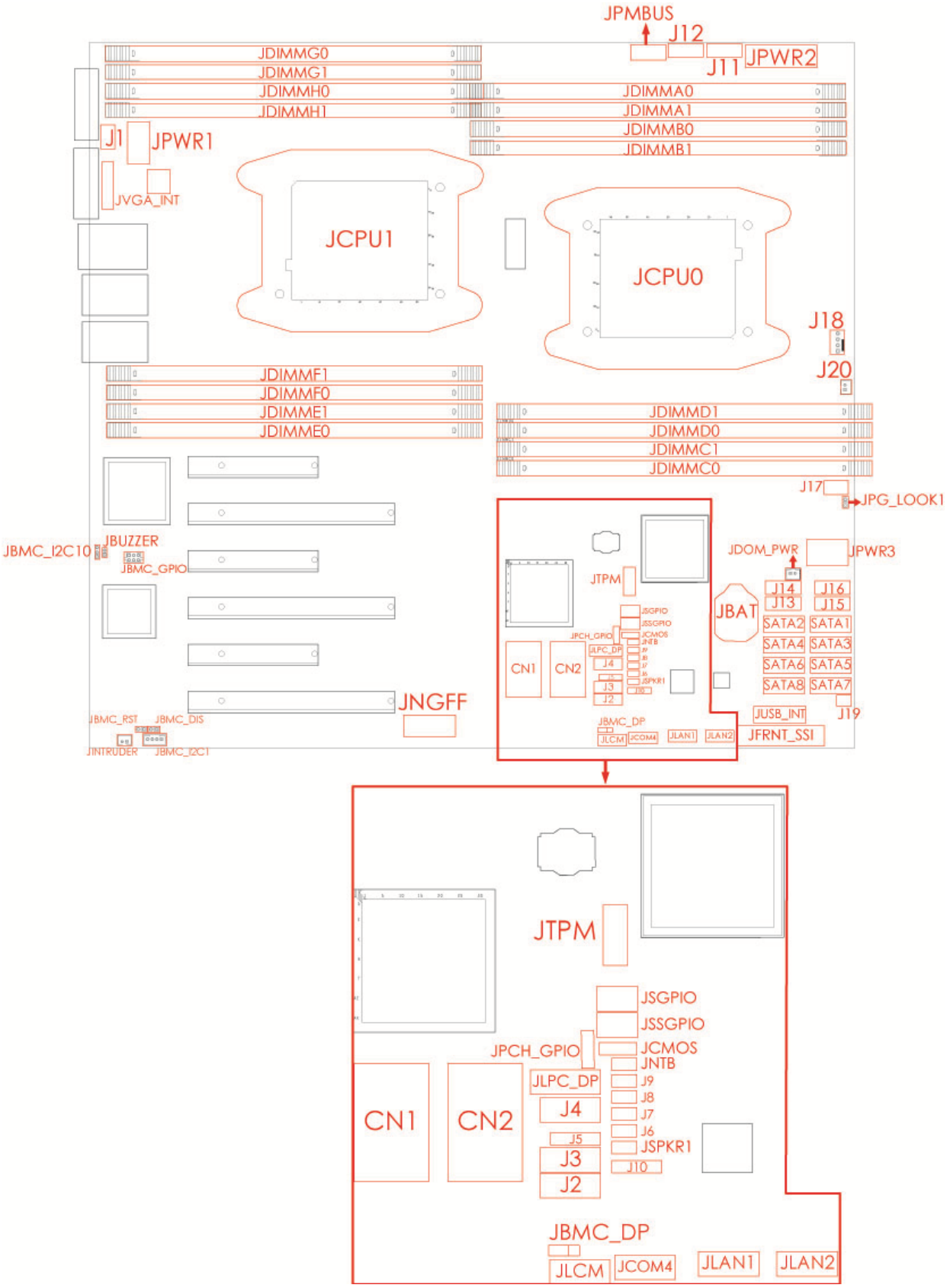
3.4 Internal Connectors/Jumpers



Connectors/Jumpers		Description	
JFRNT SSI	SSI Front Panel	1. +3.3V_DUAL 2. +3.3V_DUAL 3. KEY (no pin) 4. +5V_AUX 5. PWR_LED# 6. UIDLED_OUT# 7. +3.3V 8. SYS_HEALTH#2 9. HD_LED# 10. SYS_HEALTH#1 11. SW_PWR_BTN# 12. LAN1_LINK_UP	13. GND 14. LAN1_TRAFFIC 15. SW_RST_BTN# 16. I2C8SDA 17. GND 18. I2C8SCL 19. UID_SW_IN# 20. INTRUDER# 21. NC 22. LAN2_LINK_UP 23. FP_NMI_BTN 24. LAN2_TRAFFIC
J1	Fan Header	1. GND 2. +12V	3. FAN9_TACH 4. PWM6
J17	Fan Header	1. GND 2. +12V	3. FAN8_TACH 4. PWM5
J18	Fan Header	1. GND 2. +12V	3.FAN7_TACH 4.PWM4
JPG_LOCK	System PG Lock (Jumper)	Open/Normal (Default) Short/Lock	
JPWR3	Power Supply	1.GND 2. GND 3. GND 4. GND	5. +12V 6. +12V 7. +12V 8. +12V
JDOM_PWR	SATA-DOM Power	1.+5V	2.GND
J11	Fan Header	1. GND 2. +12V 3. FAN1_TACH	4. PWM1 5. FAN1A_PRSNT_N 6. LED_FAN1A_FAULT

J12	Fan Header	1. GND 2. +12V 3. FAN2_TACH	4. PWM1 5. FAN1B_RSNT_N 6. LED_FAN1B_FAULT
J13	Fan Header	1. GND 2. +12V 3. FAN6_TACH	4. PWM3 5. FAN3B_PRSNT_N 6. LED_FAN3B_FAULT
J15	Fan Header	1. GND 2. +12V 3. FAN5_TACH	4. PWM3 5. FAN3A_PRSNT_N 6. LED_FAN3A_FAULT
J14	Fan Header	1. GND 2. +12V 3. FAN4_TACH	4. PWM2 5. FAN2B_PRSNT_N 6. LED_FAN2B_FAULT
J16	Fan Header	1. GND 2. +12V 3. FAN3_TACH	4. PWM2 5. FAN2A_PRSNT_N 6. LED_FAN2A_FAULT
J19	External Thermal Sensor	1. HM_TD8+	2. HM_TD8-
J20	External Thermal Sensor	1. HM_TD7+	2. HM_TD7-
JUSB_INT	Front I/O USB Header	1. +5V_USB23 2. PCH_FP_USB3_RX_N2 3. PCH_FP_USB3_RX_P2 4. GND 5. PCH_FP_USB3_TX_N2 6. PCH_FP_USB3_TX_P2 7. GND 8. PCH_FP_USB2_N2 9. PCH_FP_USB2_P2 10. PCH_USB_OC#23	11. PCH_FP_USB2_P3 12. PCH_FP_USB2_N3 13. GND 14. PCH_FP_USB3_TX_P3 15. PCH_FP_USB3_TX_N3 16.GND 17. PCH_FP_USB3_RX_P3 18. PCH_FP_USB3_RX_N3 19. +5V_USB23 20. KEY (no pin)

Internal Connectors/Jumpers (Continued)

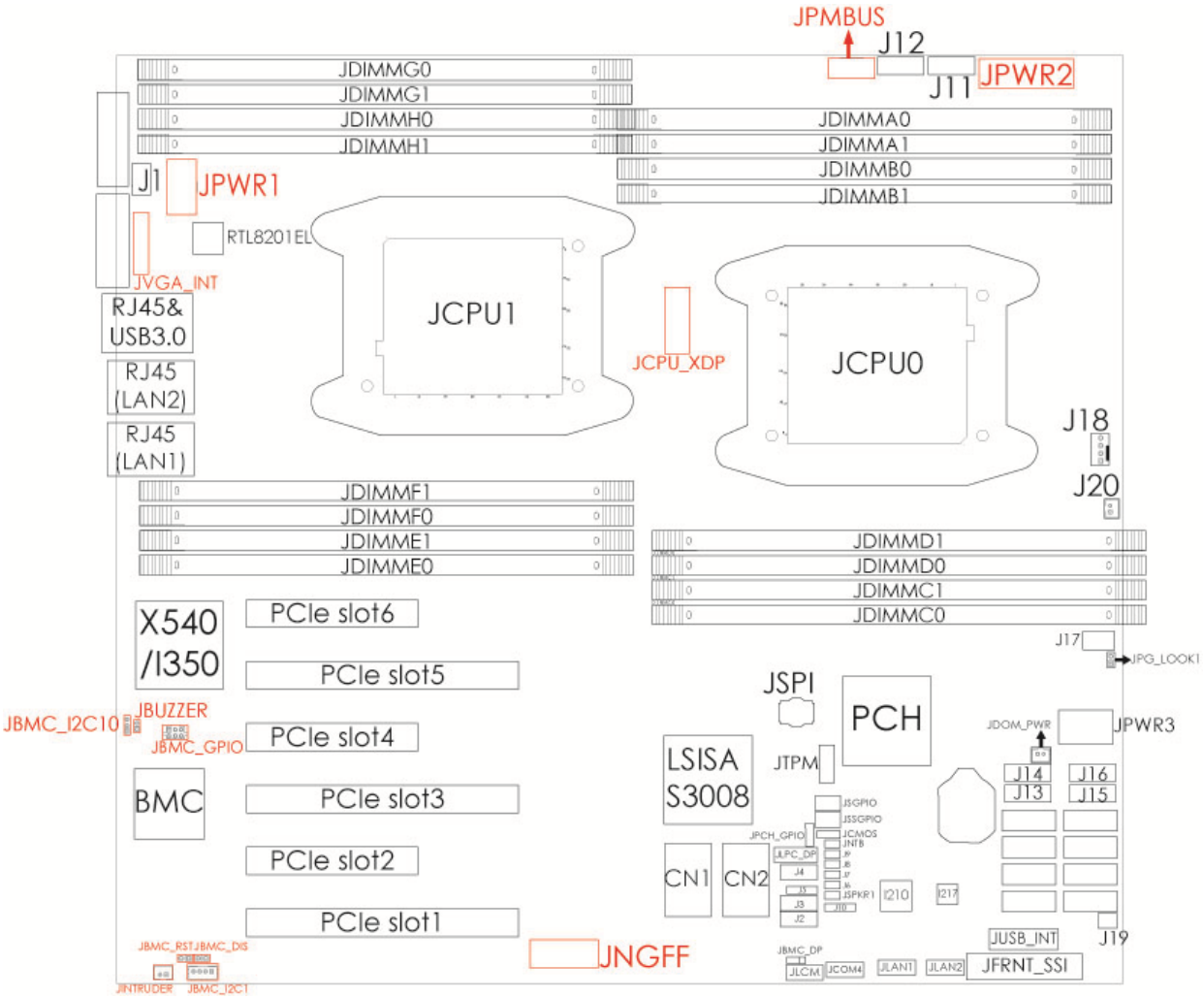


Connectors/Jumpers		Description	
JTPM	Debug Port	1.+3.3V 2.GND 3. PCH_SPI_MOSI 4. PCH_SPI_MISO 5. PCH_GPIO23	6. PCH_SPI_CLK 7. PCH_LDRQ0_N 8. PCH_SPI_CS1_N 9. RST_PLTRST_N 10. PCH_SPI_CS2_N
JSGPIO	SGPIO	1. GND 2. PCH_SDATAOUT0 3. PCH_SDATAOUT1	4. PCH_SLOAD 5. +3.3V 6. PCH_SCLOCK
JSSGPIO	SSGPIO	1. GND 2. PCH_SSDATAOUT0 3. PCH_SSDATAOUT1	4. PCH_SSLOAD 5. +3.3V 6. PCH_SSCLOCK
JCMOS	CMOS Jump Setting (Jumper)	1. P3V3_VBAT 2. RST_RTCRST_N 3. GND	Pin1-2 close/Normal(Default) Pin2-3 close/Clear CMOS
JNTB	NTB Configurations (Jumper)	Open/Upstream port(Default) Short/Downstream port	
J9	ME Force Recovery Mode(Jumper)	Open/Normal (Default) Short/ME Recovery Mode	
J8	Watch dog(Jumper)	Open/Disable (Default) Short/Enable	
J7	Flash Descriptor Security override (Jumper)	Open/Normal (Default) Short/Flash Security override	
J6	BIOS Recovery Mode (Jumper)	Open/Normal (Default) Short/BIOS Recovery Mode	
JSPKR	Speaker	1.+5V	2.PCH_SPKR_M
J10	LED	1. LAN3_TRAFFIC 2. +3.3V	3. LAN4_TRAFFIC 4. GND
JLAN2	LAN3 Header	1. MDI_N0 2. MDI_P1	6. GND 7. MDI_N3

		3. MDI_P0 4. MDI_N1 5. +1V5_DUAL_LAN4	8. MDI_P2 9. MDI_P3 10. MDI_N2
JLAN1	LAN4 Header	1. MDI_N0 2. MDI_P1 3. MDI_P0 4. MDI_N1 5. +1.0V_PHY_I217	6. GND 7. MDI_N3 8. MDI_P2 9. MDI_P3 10. MDI_N2
JCOM4	Front COM Header	1. DSRB 3. RTSB 5. CTSB 7. RIB 9. KEY (no pin)	2. DCDB 4. RXDB 6. TXDB 8. DTRB 10. GND
JLCM	LCM	1. SW_PWR_BTN# 3. TXDC 5. GND	2. SW_RST_BTN# 4. RXDC
J2	SAS Drive Error LEDs	1. SPEAKER_SSB	2. +3.3V
J3	SAS Drive Active LEDs	1. PCH_GPIO34	2.GND
J5	SAS UART0	1. UART0_TX 2. GND	3. UART0_RX 4.SAS3008_1VB
J4	SAS ICE0	1.GND	2. PCH_GPIO44
JLPC_DP	LPC Debug Port	1.GND 3. PCH_GPIO61 5. AST_SERIRQ 7. PCH_LPC_LAD2 9. PCH_LPC_LAD1 11.GND	2. CLK_33M_DP80 4. PCH_LFRAME_N 6. RST_PLTRST_N 8. PCH_LPC_LAD3 10. +3.3V 12. PCH_LPC_LAD0
JPCH_GPIO	PCH GPIO	1. PCH_GPIO27 2. PCH_GPIO21	3. GND
JBMC_DP	BMC debug Port	1.SCOM2_T3OUT 2.SCOM2_R4IN	3.GND

CN2	SFF-8643 CONN	A1.NC	C1.SIO0_SAS_DIN
		A2.SIO0_SAS_CLK	C2.GND
		A3.GND	C3.GND
		A4.SAS_EXP_RX_P2	C4. SAS_EXP_TX_P2
		A5. SAS_EXP_RX_N2	C5. SAS_EXP_TX_N2
		A6.GND	C6.GND
		A7. SAS_EXP_RX_P3	C7. SAS_EXP_TX_P3
		A8. SAS_EXP_RX_N3	C8. SAS_EXP_TX_N3
		A9.GND	C9.GND
		B1.GND	D1.SIO0_SAS_DOUT
		B2.SIO0_SAS_LOAD	D2.NC
		B3.GND	D3.GND
		B4. SAS_EXP_RX_P1	D4. SAS_EXP_TX_P1
		B5. SAS_EXP_RX_N1	D5. SAS_EXP_TX_N1
		B6.GND	D6.GND
		B7. SAS_EXP_RX_P0	D7. SAS_EXP_TX_P0
		B8. SAS_EXP_RX_N0	D8. SAS_EXP_TX_N0
		B9. GND	D9.GND
CN1	SFF-8643 CONN	A1.NC	C1.SIO1_SAS_DIN
		A2.GND	C2.GND
		A3.GND	C3.GND
		A4.SAS_EXP_RX_P6	C4. SAS_EXP_TX_P6
		A5. SAS_EXP_RX_N6	C5. SAS_EXP_TX_N6
		A6.GND	C6.GND
		A7. SAS_EXP_RX_P7	C7. SAS_EXP_TX_P7
		A8. SAS_EXP_RX_N7	C8. SAS_EXP_TX_N7
		A9.GND	C9.GND
		B1.GND	D1.SIO1_SAS_DOUT
		B2.SIO1_SAS_LOAD	D2.NC
		B3.GND	D3.GND
		B4. SAS_EXP_RX_P5	D4. SAS_EXP_TX_P5
		B5. SAS_EXP_RX_N5	D5. SAS_EXP_TX_N5
		B6.GND	D6.GND
		B7. SAS_EXP_RX_P4	D7. SAS_EXP_TX_P4
		B8. SAS_EXP_RX_N4	D8. SAS_EXP_TX_N4
		B9. GND	D9.GND

Internal Connectors/Jumpers (Continued)



Connectors/Jumpers		Description	
JPWR1	Power Supply	1.GND 2. GND 3. GND 4. GND	5. +12V 6. +12V 7. +12V 8. +12V
JPWR2	Power Supply	1. GND 2. GND 3. GND 4. GND 5. GND 6. GND 7. PS_ON#	8. +12V 9. +12V 10. +12V 11. +12V 12. +12V 13. +5V_AUX 14. POWER OK
JPMBUS	PMBUS	1. SMB_PMBUS_CLK 2. SMB_PMBUS_DATA 3. PMBUS_ALERT_N	4. GND 5. +3.3V

JVGA_INT	**VGA**	**1. GND** **3. DACGOA** **5. DDC_DATAO** **7. GND** **9. NC** **11. AVSYNCO** **13. GND** **15. GND**	**2. DACROA** **4. NC** **6. GND** **8. DACBOA** **10. AHSYNCO** **12. DVO_5V** **14. GND** **16. DDC_CLKO**
JBUZZER	**BMC Buzzer**	**1.+5V**	**2. BMC BUZZER-**
JBMC_I2C10	**BMC_I2C10**	**1. I2C10SCL** **2. I2C10SDA**	**3. GND**
JBMC_GPIO	**GPIO**	**1.GND** **3. I2C9SDA** **5. I2C9SCL**	**2. BMC_GPY2** **4. BMC_GPY1** **6. BMC_GPY0**
JINTRUDER	**Intruder**	**OFF/Enable(Default)** **Short/Case Open**	
JBMC_RST	**BMC Reset Setting (Jumper)**	**Open/Normal (Default)** **Short/Reset BMC**	
JBMC_DIS	**BMC ARM Setting (Jumper)**	**Open/Normal (Default)** **Short/Disable**	
JBMC_I2C1	**BMC IPMI**	**1. I2C1SDA** **2. GND**	**3. I2C1SCL** **4. NC**

JCPU_XDP	**CPU XDP Header**	**1. GND** **3. XDP_CPU_PREQ_N** **5. XDP_CPU_PREQ_P** **7. GND** **9. XDP_CPU0_MBP_N2** **11.XDP_CPU0_MBP_N3** **13. GND** **15. XDP_CPU0_MBP_N4** **17. XDP_CPU0_MBP_N5** **19. GND** **21. XDP_CPU_MBP_N6** **23. XDP_CPU_MBP_N7** **25. GND** **27. XDP_CPU1_MBP_N2** **29. XDP_CPU1_MBP_N3** **31. GND** **33. XDP_CPU1_MBP_N4** **35. XDP_CPU1_MBP_N5** **37.GND** **39. PWRGD_CPU0_GTL** **41. XDP_PWRGD_RST** **43. PVCCIO** **45. SRP_CPU_PWR_DEBUG_N** **47. XDP_BPM_MUX_CTL** **49.GND** **51. SMB_HOST_3V3_DAT** **53. SMB_HOST_3V3_CLK** **55. GND** **57. JTAG_CPU2_TCLK** **59. JTAG_CPU_TCLK**	**2.GND** **4. TP_XDP_CPU_OBSFN_C0** **6. TP_XDP_CPU_OBSFN_C1** **8. GND** **10. XDP_CPU2_MBP_N2** **12. XDP_CPU2_MBP_N3** **14. GND** **16. XDP_CPU2_MBP_N4** **18. XDP_CPU2_MBP_N5** **20. GND** **22. TP_XDP_CPU_OBSFN_D0** **24. TP_XDP_CPU_OBSFN_D1** **26. GND** **28. XDP_CPU3_MBP_N2** **30. XDP_CPU3_MBP_N3** **32.GND** **34. XDP_CPU3_MBP_N4** **36. XDP_CPU3_MBP_N5** **38.GND** **40. CLK_100M_XDP_DP** **42. CLK_100M_XDP_DN** **44. PVCCIO** **46. RST_LVC1_CPU01_RESET_N** **48. PCH_SYSRST#** **50.GND** **52. JTAG_CPU_TDO** **54. JTAG_CPU_TRST_N** **56. JTAG_CPU_TDI** **58. JTAG_CPU_TMS** **60. XDP_PRESENT_N**

JNGFF	**NGFF M.2 CONN**	1. GND 2. +3.3V 3. GND 4. +3.3V 5. CPU0_EXP1_TX_DN_0 6. NC 7. CPU0_EXP1_TX_DP_0 8. NC 9. GND 10. +3.3V 11. CPU0_EXP1_RX_DN_0 12. +3.3V 13. CPU0_EXP1_RX_DP_0 14. +3.3V 15. GND 16. +3.3V 17. CPU0_EXP1_TX_DN_1 18. +3.3V 19. CPU0_EXP1_TX_DP_1 20. NC 21. GND 22. NC 23. CPU0_EXP1_RX_DN_1 24. NC 25. CPU0_EXP1_RX_DP_1 26. NC 27. GND 28. NC 29. CPU0_EXP1_TX_DN_2 30. NC 31. CPU0_EXP1_TX_DP_2 32. NC 33. GND 34. NC	35. GND 36. NC 37. CPU0_EXP1_RX_DN_2 38. NGFF_DEVSLP 39. GND 40. NC 41. NGFF_SATA_B+_TX_DN_0 42. NC 43. NGFF_SATA_B-_TX_DP_0 44. NC 45. GND 46. NC 47. NGFF_SATA_A-_RX_DN_0 48. NC 49. NGFF_SATA_A+_RX_DP_0 50. CPE_RST_N 51. GND 52. NGFF_CLKREQ# 53. GND 54. PCH_WAKE_N 55. CLK_100M_NGFF_DN 56. NC 57. GND 58. NC 59. ~ 66. Key M 67. NC 68. PCH_SHSCLK_N 69. NGFF_PEDET 70. +3.3V 71. GND 72. +3.3V 73. GND 74. +3.3V 75. GND

3.5 LEDs

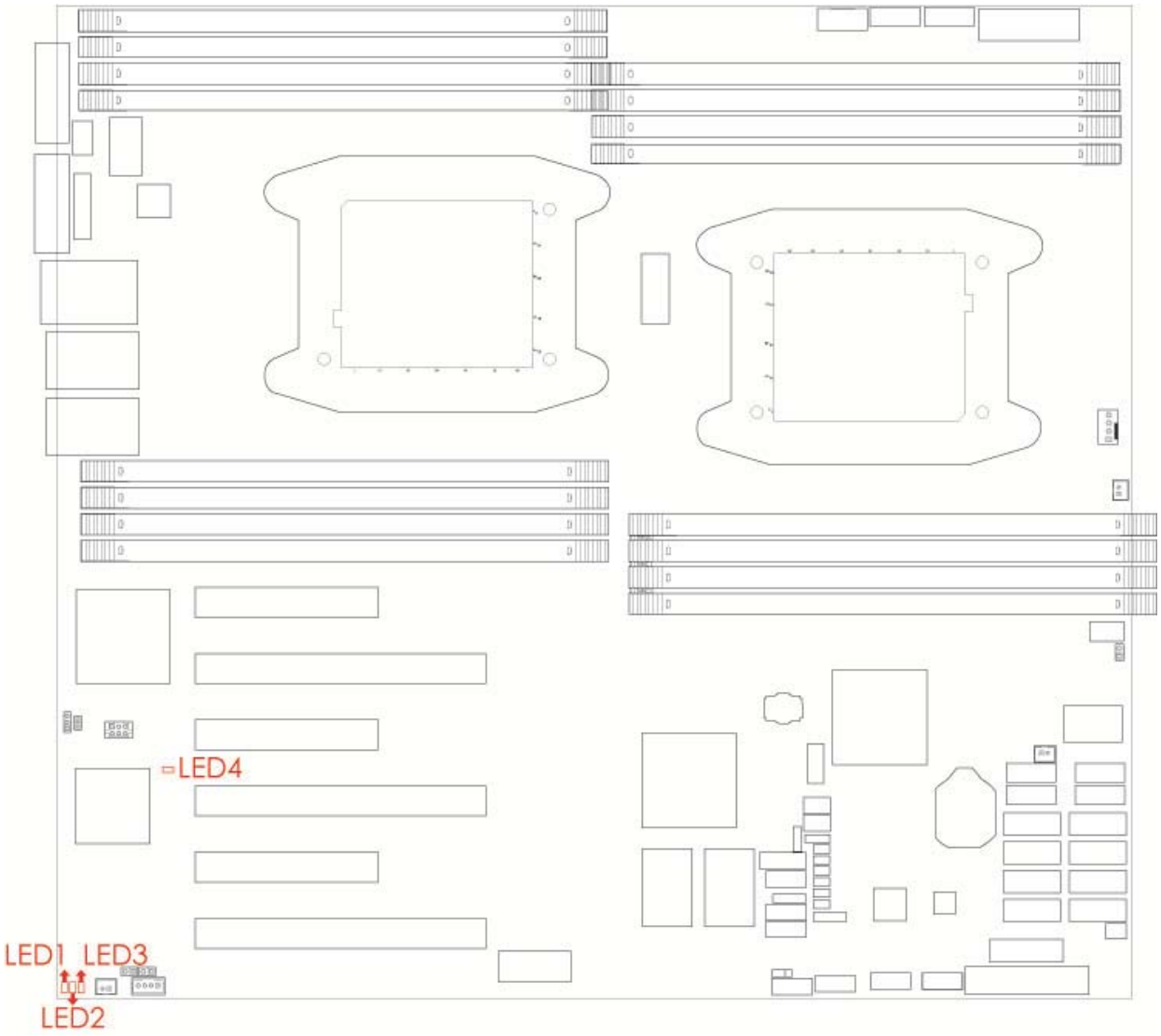
3.5.1 Front Panel LED

Power	Yellow	System is On
	Blinking	System is in Standby; System is off, but has AC power
	Off	System has no AC power
UID	Blue	UID activity detected
	Off	No UID activity detected
System Error	Red	Critical system failure detected (processors, memory, voltage regulators, thermal events,fan failures, NMI, etc)
	Off	No critical failures detected
Hard Disk	Green (Blinking)	Disk activity detected
	Off	No disk activity detected
LAN 1	Green (Blinking)	LAN1 activity detected
	Off	LAN1 is not active
LAN 2	Green (Blinking)	LAN2 activity detected
	Off	LAN2 is not active

3.5.2 Rear chassis LEDs

LAN* (Right)	Green (Blinking)	LAN* activity detected
	Off	LAN* is not active, LAN cable no connect
LAN* (Left)	Status LED	100M: Green 10M/No connect: Off
LAN1 (Right)	Green (Blinking)	LAN1 activity detected
	Off	LAN1 is not active, LAN cable no connect
LAN1 (Left)	Status LED	10G : Green, 1G : Yellow, 10M/No connect: Off(X540) 1G : Yellow, 100M: Green, 10M/No connect: Off(I350)
LAN2 (Right)	Green (Blinking)	LAN2 activity detected
	Off	LAN2 is not active, LAN cable no connect
LAN2 (Left)	Status LED	10G : Green, 1G : Yellow, 10M/No connect: Off(X540) 1G : Yellow, 100M: Green, 10M/No connect: Off(I350)

3.5.3 Internal LEDs



HEART BIT (LED4)	ON(Blinking)	BMC activity detected
	OFF	BMC is not active
SYS PG LED (LED2)	ON	System power good ready
	OFF	System power good is not ready
RSMRST PG LED (LED3)	ON	Resume Well Reset ready
	OFF	Resume Well Reset is not ready
UID LED (LED1)	ON	UID activity detected
	OFF	UID not activity detected

Chapter4.
BIOS Configuration and Settings

CAUTION: WHEN QUIET BOOT IS ENABLED, OEM LOGO WILL BE DISPLAYED INSTEAD OF POST MESSAGES.

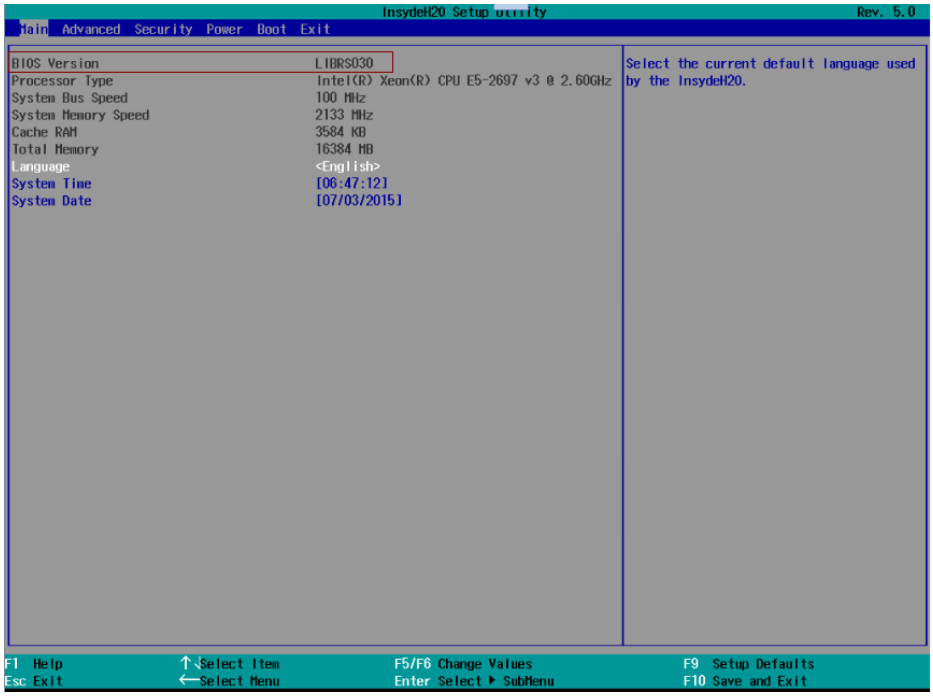
1. Press ESC to run the setup procedure.

Energy Efficient Solution
BIOS Version : LIBRS030
BIOS Build Date : 09/17/2014
Processor Type : Intel(R) Xeon(R) CPU E5-2697 v3 @ 2.60GHz
Processor Type : Intel(R) Xeon(R) CPU E5-2697 v3 @ 2.60GHz
System Memory Speed : 2133 MHz
Serial ATA Port0 : CF 1GB
USB Device 1 : AMI Virtual CDROM0
Press <S> key to dump system configuration information
CPUID : 306F2
Press Esc for boot options

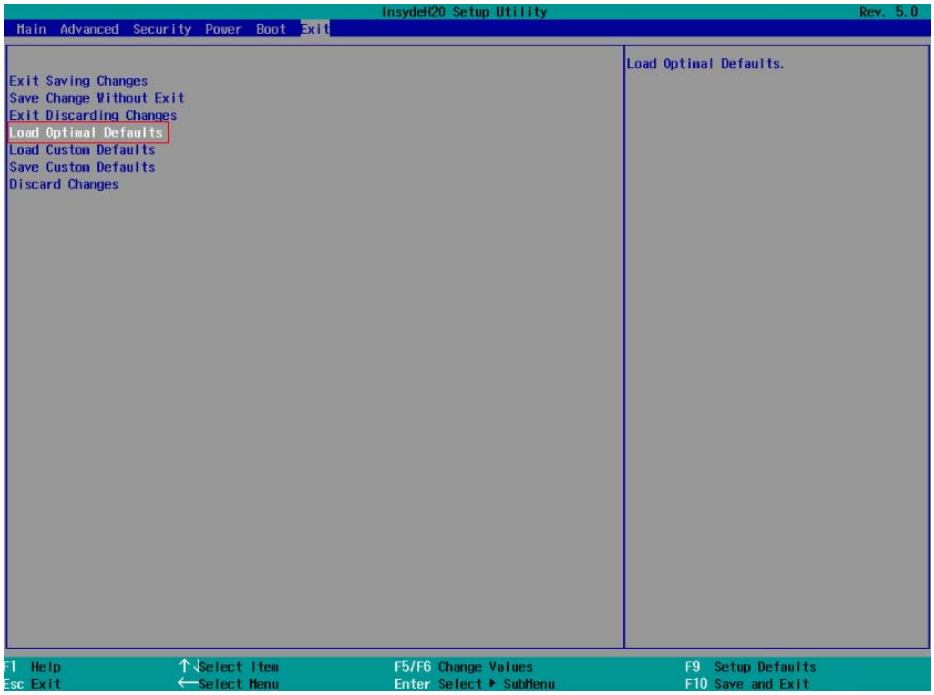
2. Choose the SCU to enter the Setup menu.

CAUTION: FOR THE OFFICIAL RELEASED VERSION, THE LAST DIGIT OF THE BIOS VERSION MUST END IN AN "0."

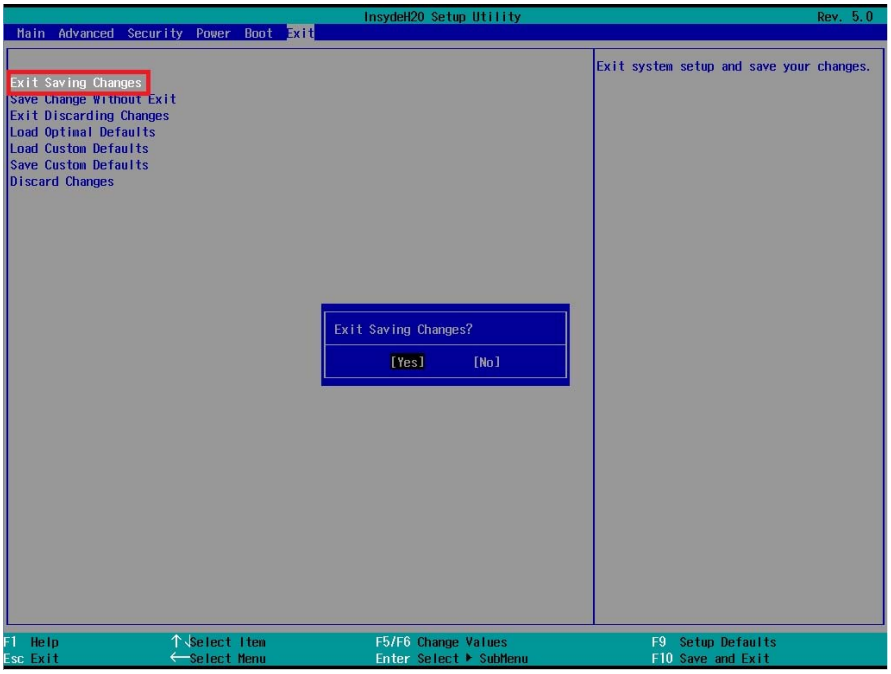
3. Identify the BIOS Version



4. Load Optimal Default setting



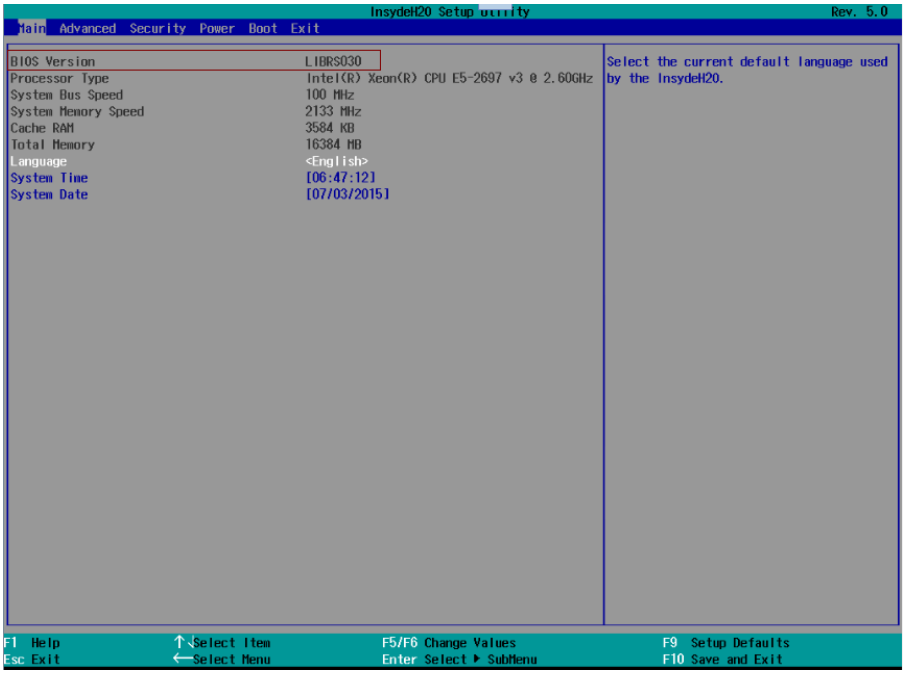
5. Save the setting and exit the BIOS setup utility.



4.1 Updating BIOS

Important Notes:

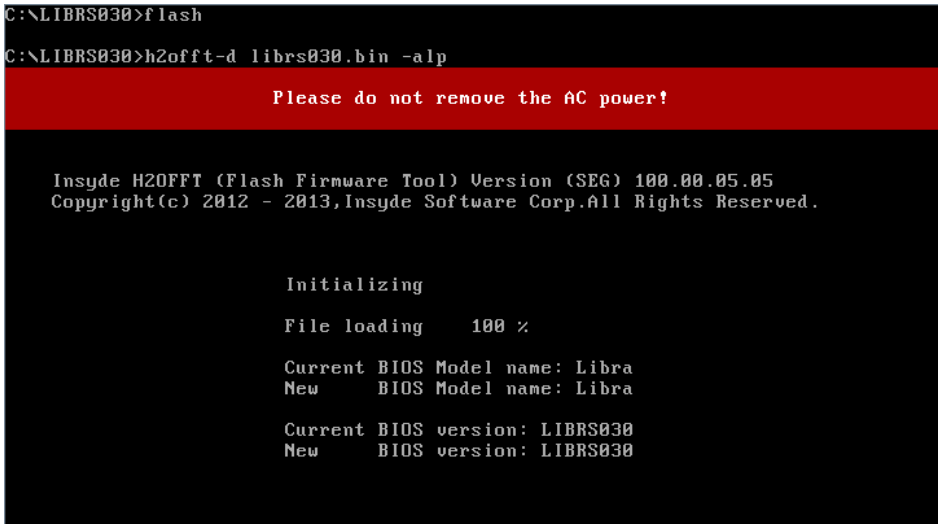
To identify the current BIOS version, please check out on BIOS setup.

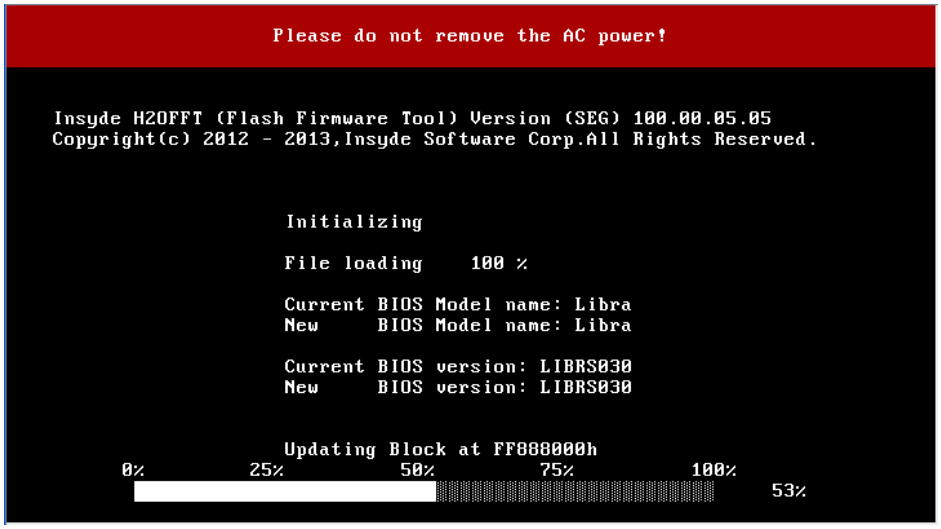


Update by Insyde H2offt-d utility under DOS environment

If you need to update Flash in the DOS environment, please use H2offt-d utility. To use this utility, you must include the flash.bat , H2offt-d.exe, and bin file in the same folder. Please follow the instructions to update whole flash part:

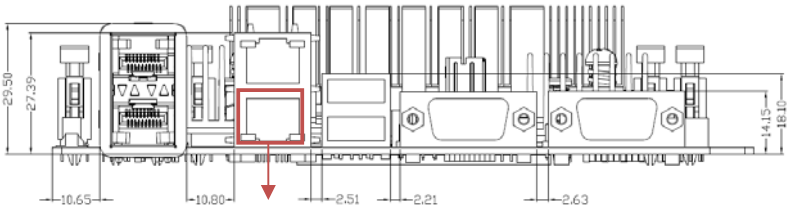
1. **Execute flash.bat to update Flash in the DOS environment.**


C:\LIBRS030>flash
C:\LIBRS030>h2offt-d librs030.bin -alp
Please do not remove the AC power!
Insyde H2OFFT (Flash Firmware Tool) Version (SEG) 100.00.05.05
Copyright(c) 2012 - 2013,Insyde Software Corp.All Rights Reserved.
Initializing
File loading 100 %
Current BIOS Model name: Libra
New BIOS Model name: Libra
Current BIOS version: LIBRS030
New BIOS version: LIBRS030


Please do not remove the AC power!
Insyde H2OFFT (Flash Firmware Tool) Version (SEG) 100.00.05.05
Copyright(c) 2012 - 2013,Insyde Software Corp.All Rights Reserved.
Initializing
File loading 100 %
Current BIOS Model name: Libra
New BIOS Model name: Libra
Current BIOS version: LIBRS030
New BIOS version: LIBRS030
Updating Block at FF888000h
0% 25% 50% 75% 100%
53%

Chapter 5.
BMC Configuration and Settings

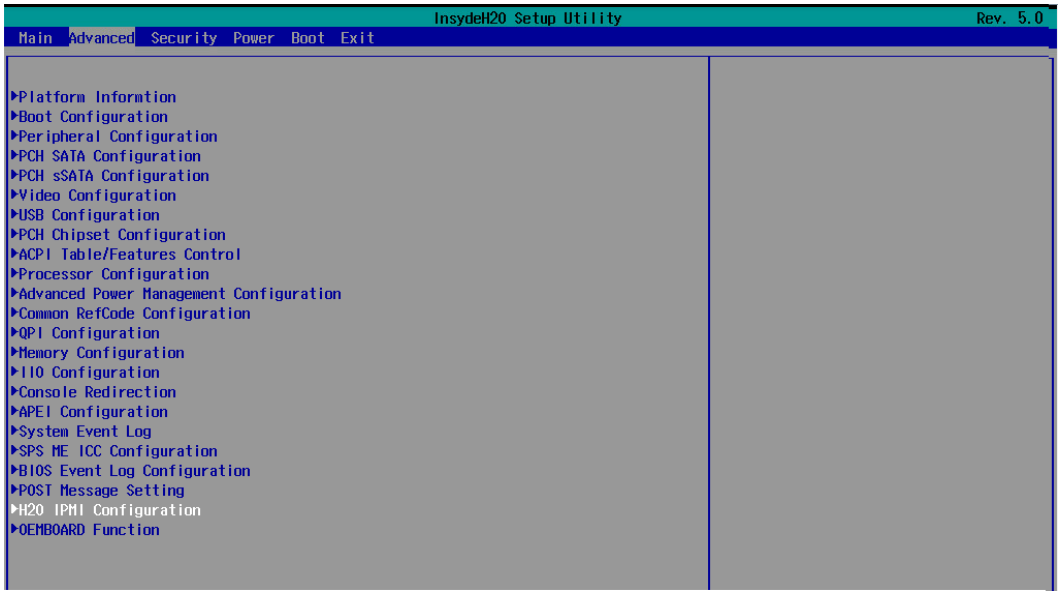
Insert Ethernet LAN cable into the BMC LAN port. There are two methods to setup BMC IP:

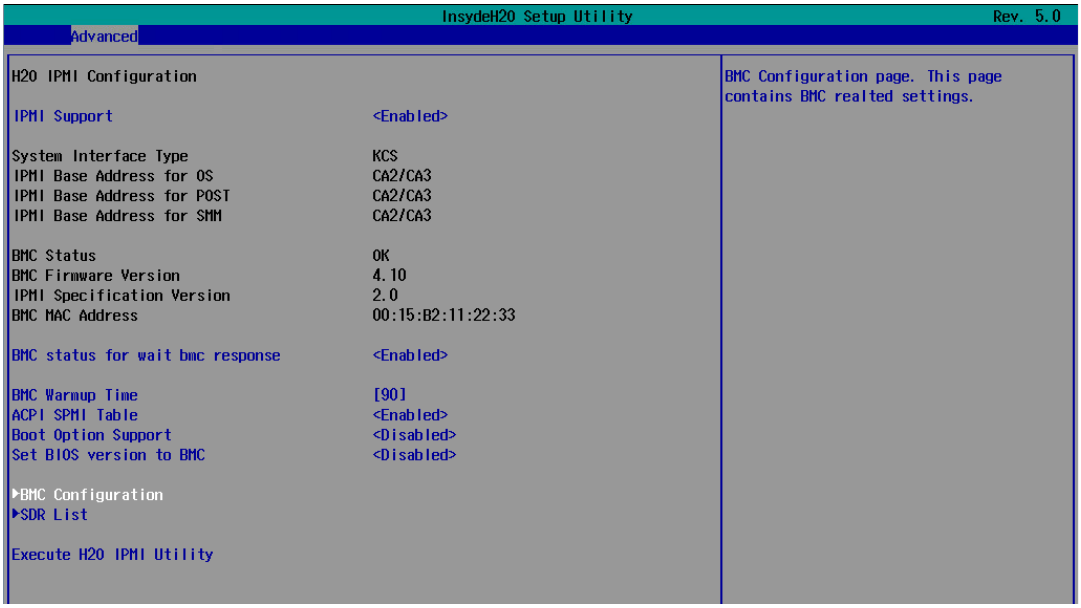


BMC management port

5.1 Method 1 (Use the BIOS setup)

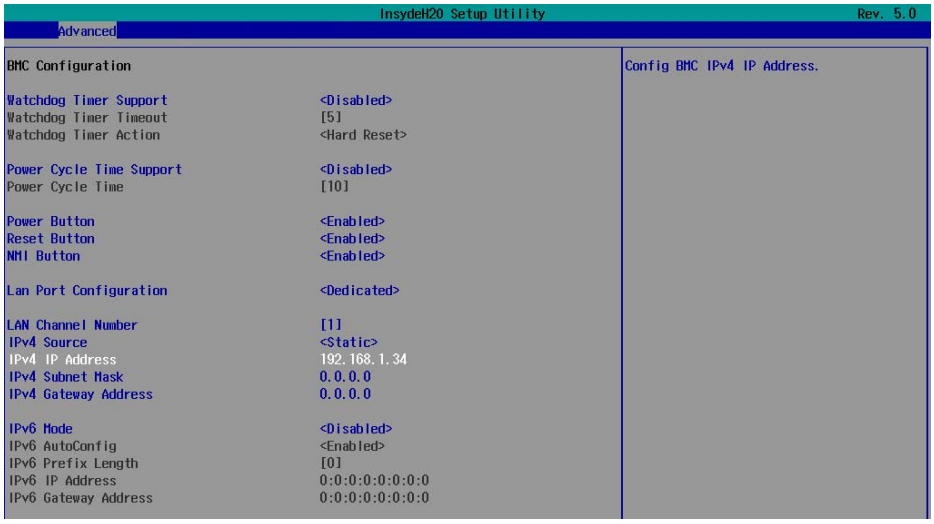
BIOS SETUP → Advanced → H2O IPMI configuration →BMC Configuration → IPv4 source → Static



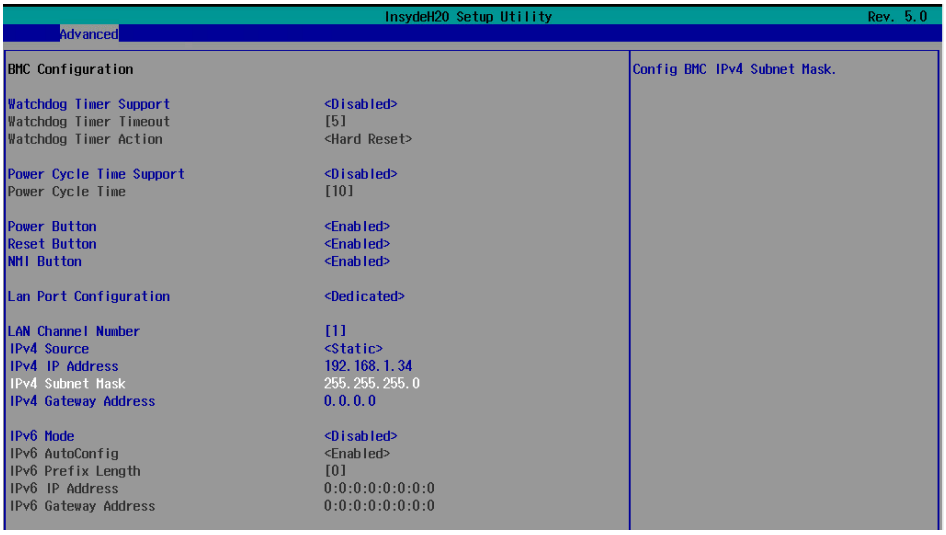

InsydeH20 Setup Utility
Rev. 5.0
Advanced
H2O IPMI Configuration
IPMI Support
<Enabled>
System Interface Type
KCS
IPMI Base Address for OS
CA2/CA3
IPMI Base Address for POST
CA2/CA3
IPMI Base Address for SMM
CA2/CA3
BMC Status
OK
BMC Firmware Version
4.10
IPMI Specification Version
2.0
BMC MAC Address
00:15:B2:11:22:33
BMC status for wait bmc response
<Enabled>
BMC Warmup Time
[90]
ACPI SPMI Table
<Enabled>
Boot Option Support
<Disabled>
Set BIOS version to BMC
<Disabled>
▶BMC Configuration
▶SDR List
Execute H20 IPMI Utility
BMC Configuration page. This page contains BMC realted settings.

InsydeH20 Setup Utility
Rev. 5.0
Advanced
BMC Configuration
Watchdog Timer Support
<Disabled>
Watchdog Timer Timeout
[5]
Watchdog Timer Action
<Hard Reset>
Power Cycle Time Support
<Disabled>
Power Cycle Time
[10]
Power Button
<Enabled>
Reset Button
<Enabled>
NMI Button
<Enabled>
Lan Port Configuration
<Dedicated>
LAN Channel Number
[1]
IPv4 Source
<Static>
IPv4 IP Address
192.168.1.34
IPv4 Subnet Mask
0.0.0.0
IPv4 Gateway Address
0.0.0.0
IPv6 Mode
<Disabled>
IPv6 AutoConfig
<Enabled>
IPv6 Prefix Length
[0]
IPv6 IP Address
0:0:0:0:0:0:0:0
IPv6 Gateway Address
0:0:0:0:0:0:0:0
Static
DHCP
DHCP: BMC IPv4 settings will be configured automatically by DHCP.
Static: BMC IPv4 settings will be configured manually

1. Input IP address. Set static IP.



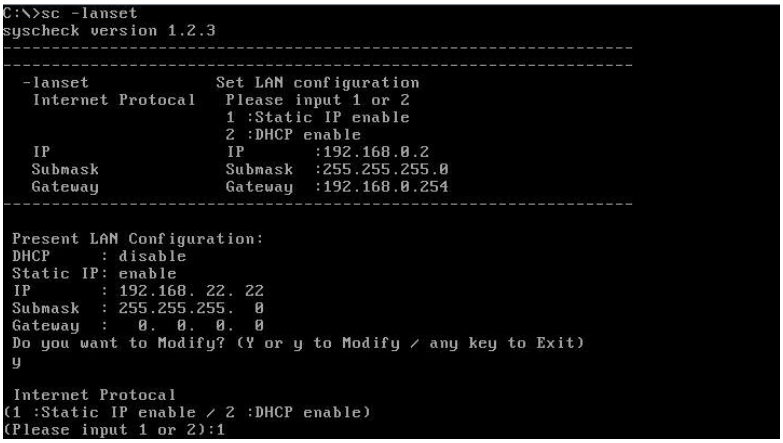
2. Input subnet mask address.



5.2 Method 2 (Use a Dos tool - Syscheck)

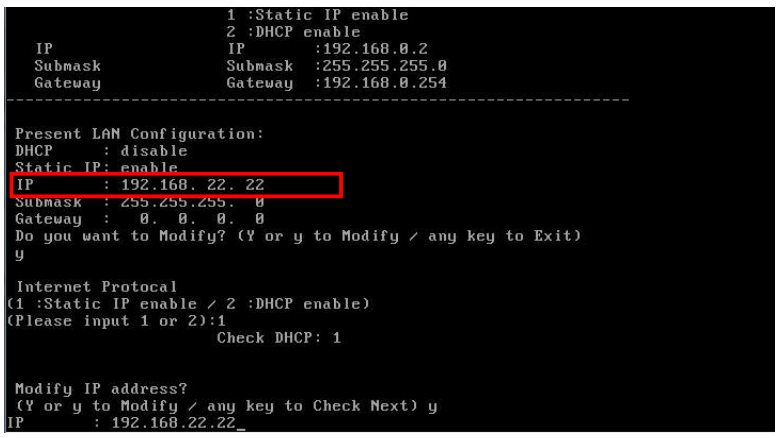
1. Type : sc –lanset.

2. Modify IP setting.


C:\>sc -lanset
syscheck version 1.2.3
-lanset Set LAN configuration
Internet Protocal Please input 1 or 2
1 :Static IP enable
2 :DHCP enable
IP IP :192.168.0.2
Submask Submask :255.255.255.0
Gateway Gateway :192.168.0.254
Present LAN Configuration:
DHCP : disable
Static IP: enable
IP : 192.168. 22. 22
Submask : 255.255.255. 0
Gateway : 0. 0. 0. 0
Do you want to Modify? (Y or y to Modify / any key to Exit)
y
Internet Protocal
(1 :Static IP enable / 2 :DHCP enable)
(Please input 1 or 2):1

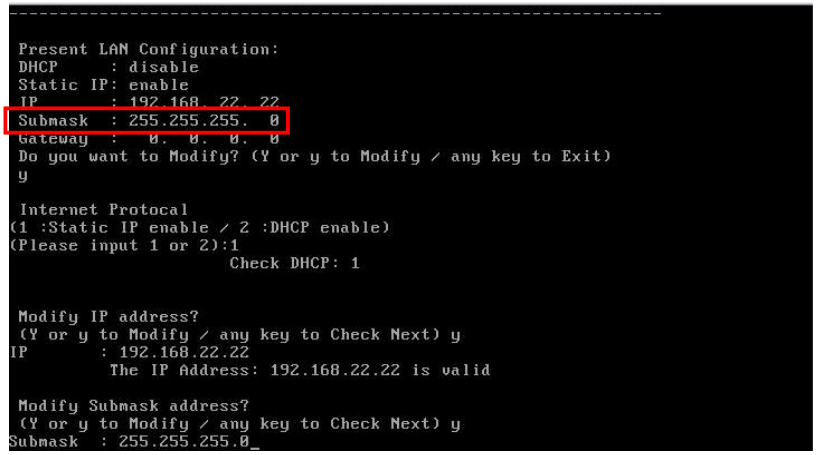
NOTE: TYPE 1 FOR SELECTING STATIC IP MODE OR TYPE 2 FOR SELECTING DHCP MODE.

3. Input IP address.

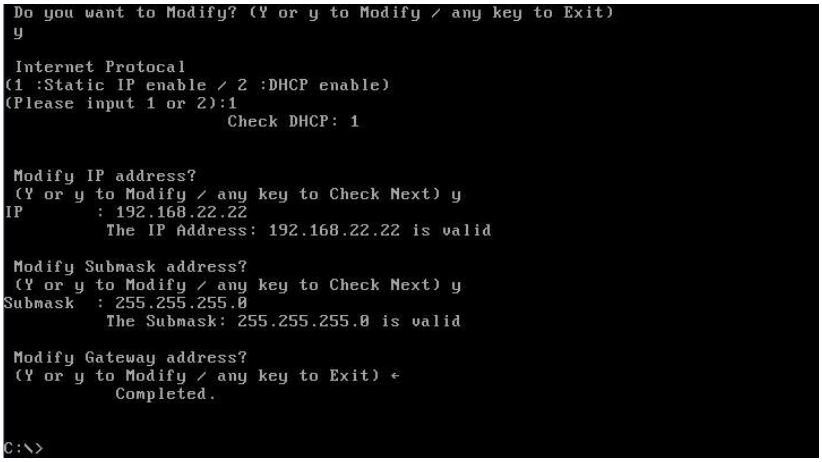

1 :Static IP enable
2 :DHCP enable
IP IP :192.168.0.2
Submask Submask :255.255.255.0
Gateway Gateway :192.168.0.254
Present LAN Configuration:
DHCP : disable
Static IP: enable
IP : 192.168. 22. 22
Submask : 255.255.255. 0
Gateway : 0. 0. 0. 0
Do you want to Modify? (Y or y to Modify / any key to Exit)
y
Internet Protocal
(1 :Static IP enable / 2 :DHCP enable)
(Please input 1 or 2):1
Check DHCP: 1
Modify IP address?
(Y or y to Modify / any key to Check Next) y
IP : 192.168.22.22_

4. **Input submask address.**

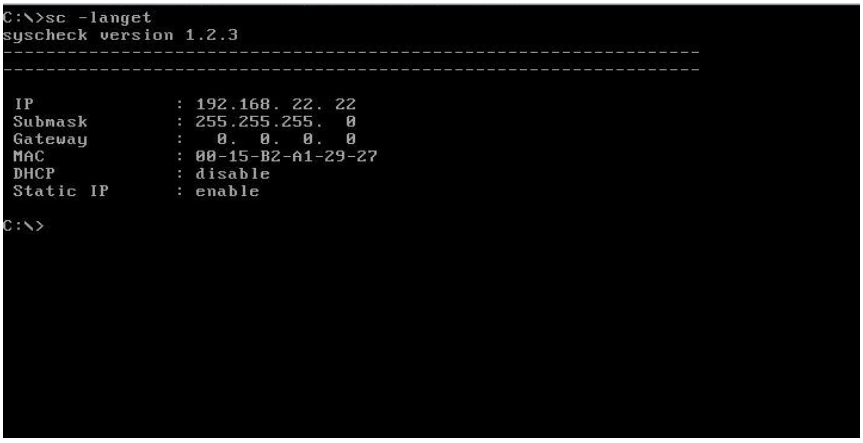
Below IP address is an example using a default IP setting. User is allowed to change the IP address for realistic use.


Present LAN Configuration:
DHCP : disable
Static IP: enable
IP : 192.168. 22. 22
Submask : 255.255.255. 0
Gateway : 0. 0. 0. 0
Do you want to Modify? (Y or y to Modify / any key to Exit)
y
Internet Protocal
(1 :Static IP enable / 2 :DHCP enable)
(Please input 1 or 2):1
Check DHCP: 1
Modify IP address?
(Y or y to Modify / any key to Check Next) y
IP : 192.168.22.22
The IP Address: 192.168.22.22 is valid
Modify Submask address?
(Y or y to Modify / any key to Check Next) y
Submask : 255.255.255.0_

5. **Finish BMC IP configuration.**


Do you want to Modify? (Y or y to Modify / any key to Exit)
y
Internet Protocal
(1 :Static IP enable / 2 :DHCP enable)
(Please input 1 or 2):1
Check DHCP: 1
Modify IP address?
(Y or y to Modify / any key to Check Next) y
IP : 192.168.22.22
The IP Address: 192.168.22.22 is valid
Modify Submask address?
(Y or y to Modify / any key to Check Next) y
Submask : 255.255.255.0
The Submask: 255.255.255.0 is valid
Modify Gateway address?
(Y or y to Modify / any key to Exit) ←
Completed.
C:\>

NOTE: TYPE SC.EXE –LANGET COMMAND TO OBTAIN BMC IP AND MAC ADDRESS.

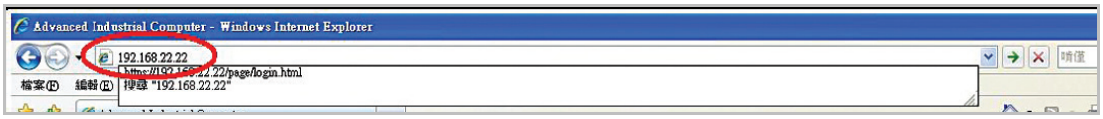


5.3 Connect to BMC

NOTE: THIS FEATURE WORKS WITH JAVA 6 RUNTIME INSTALLED CONSOLE ENVIRONMENT.

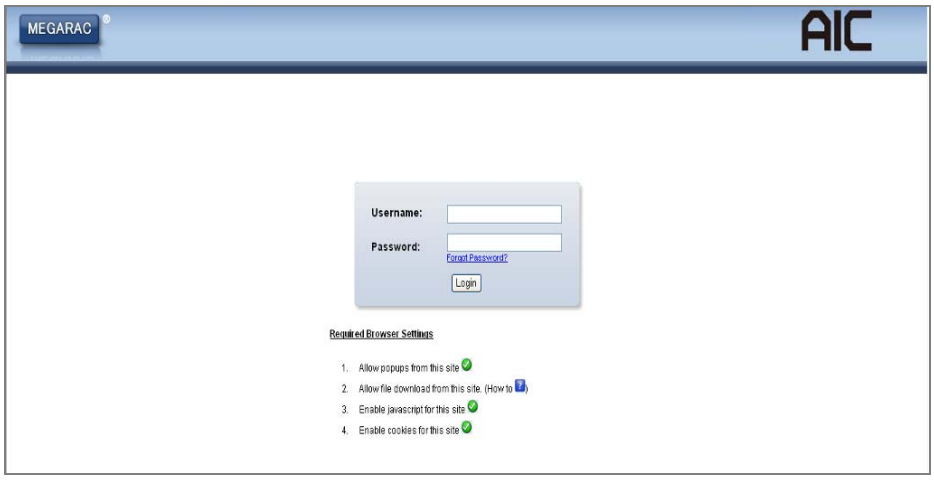
Below IP address is an example using default IP setting. User is allowed to change the IP address for realistic use.

1. **Open the browser then type default BMC IP address: 192.168.22.22**



2. **Use the default user name and password for first-time login to BMC WEB GUI.**

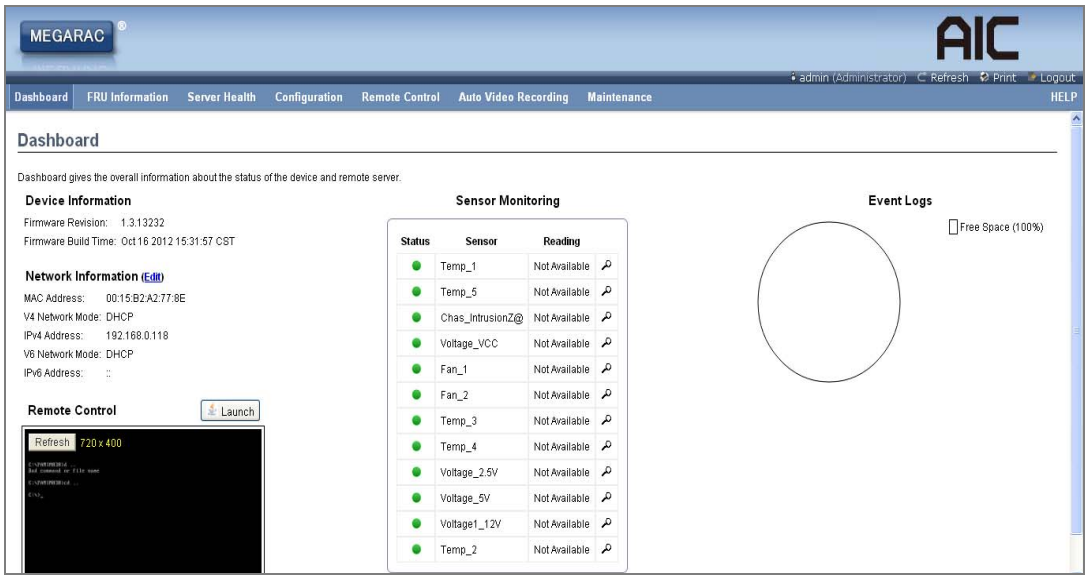
Field:	Default
User Name:	admin
Password:	admin



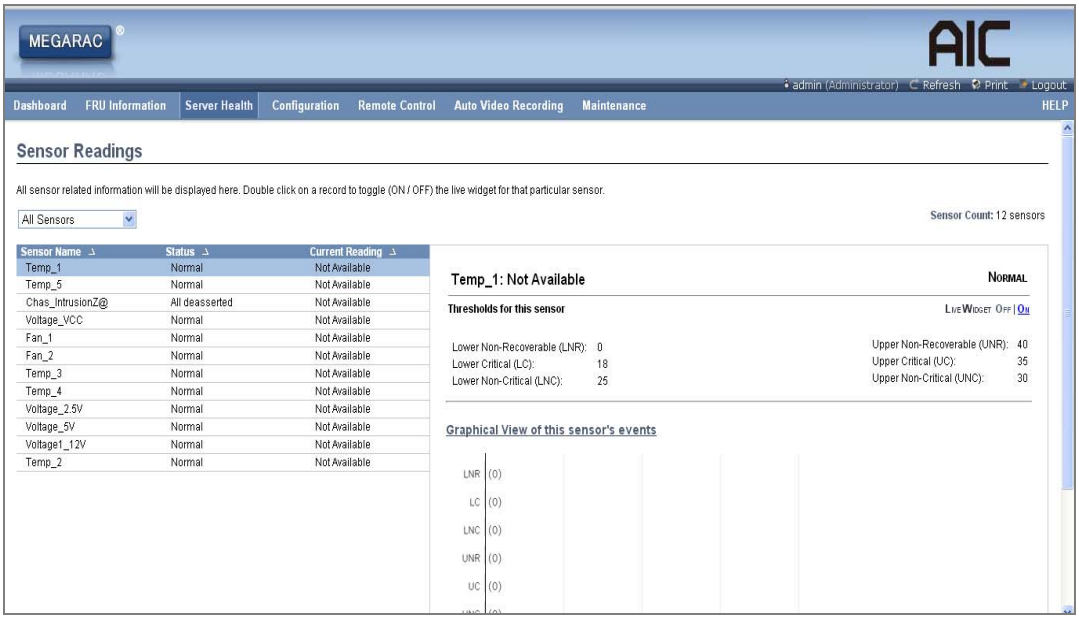
NOTE: THE DEFAULT USER NAME AND PASSWORD ARE IN LOWER-CASE CHARACTERS.

NOTE: USERS WHO LOGIN WITH THE ROOT USER NAME AND PASSWORD WILL HAVE FULL ADMINISTRATIVE POWER. THE ROOT PASSWORD CAN BE CHANGED AFTER LOGIN.

3. Information of firmware.

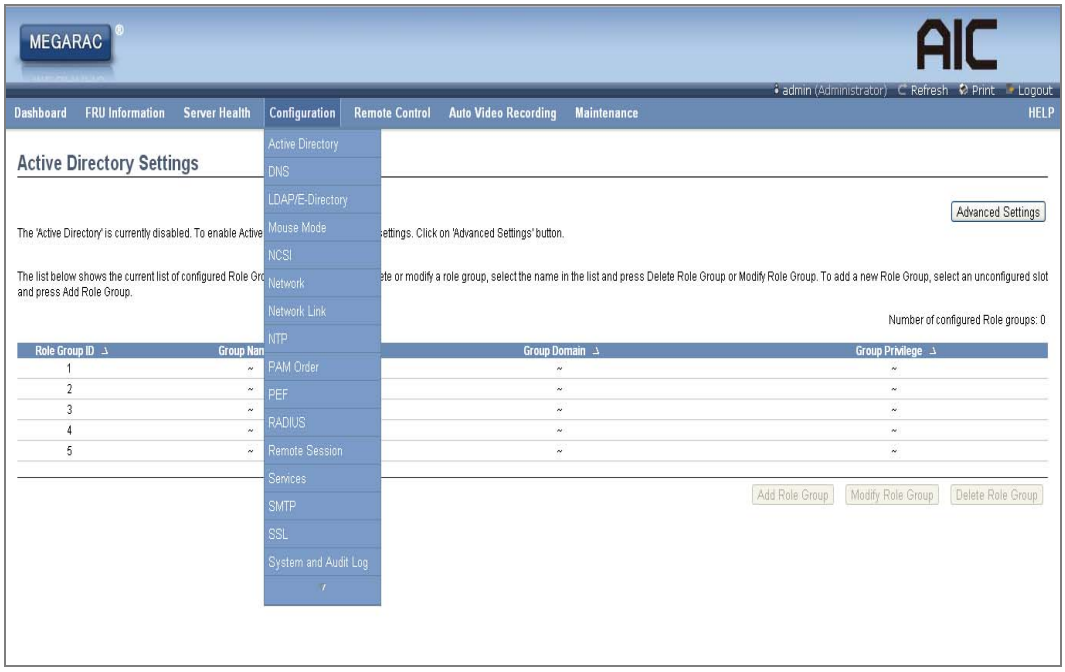


4. Server Health - Sensor Readings:

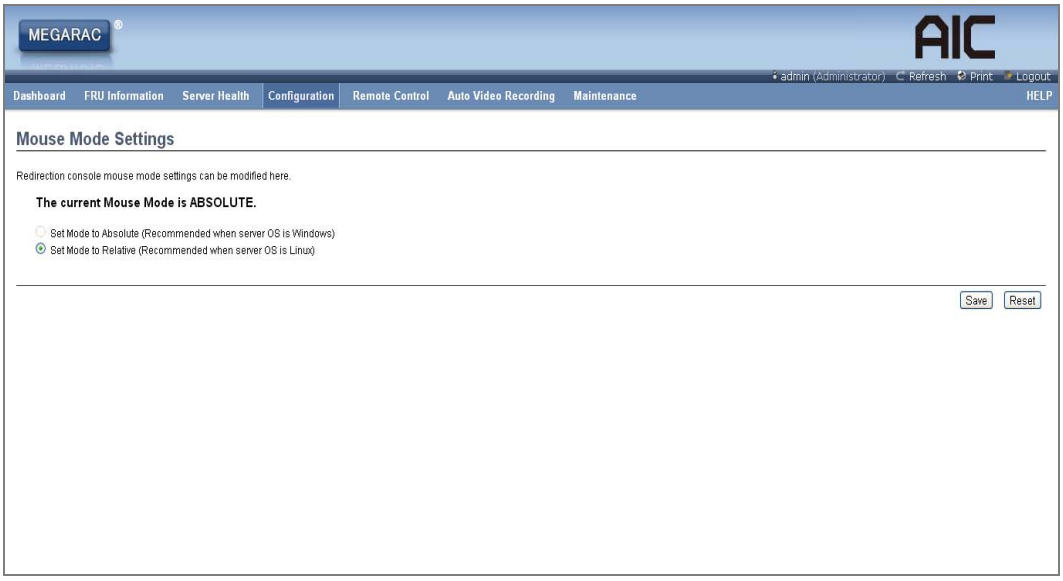


5. Configuration

Please refer to AIC BMC User Guide for more information on AIC BMC.

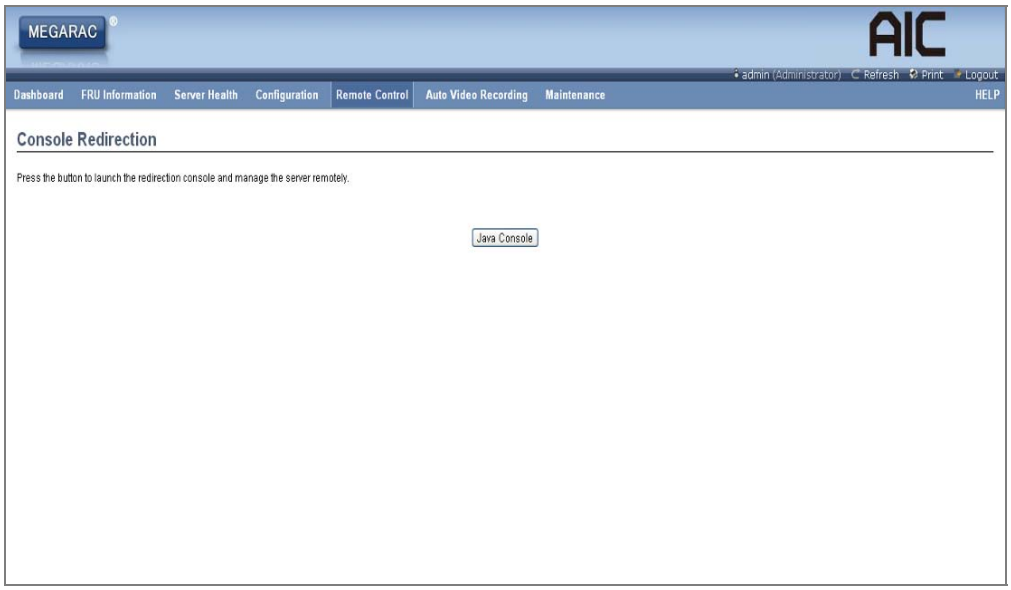


Mouse Mode setting:

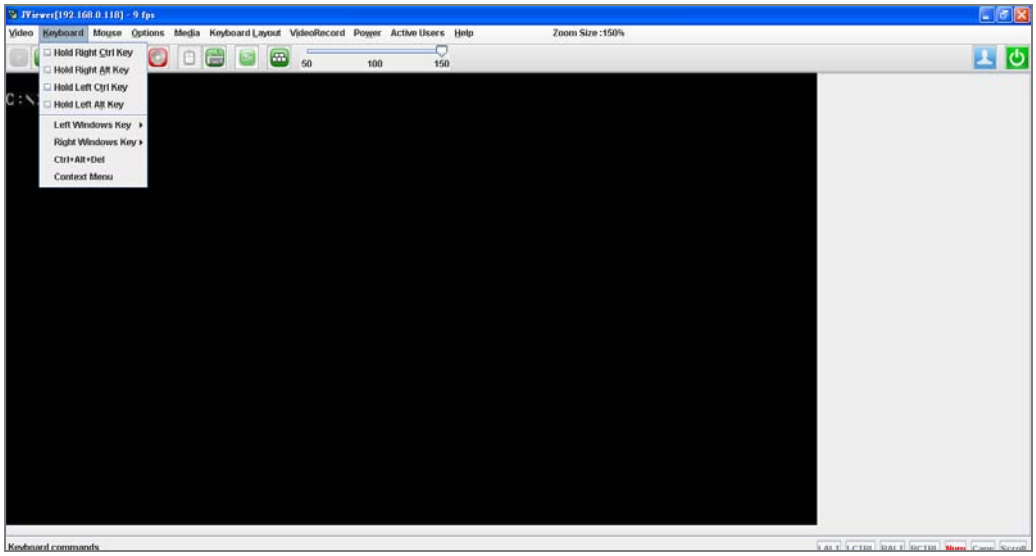

MEGARAC
AIC
admin (Administrator) Refresh Print Logout
Dashboard FRU Information Server Health Configuration Remote Control Auto Video Recording Maintenance HELP
Mouse Mode Settings
Redirection console mouse mode settings can be modified here.
The current Mouse Mode is ABSOLUTE.
Set Mode to Absolute (Recommended when server OS is Windows)
Set Mode to Relative (Recommended when server OS is Linux)
Save
Reset

- **For Windows OS environment, set mode to absolute.**
- **For Linux OS environment, set mode to relative.**

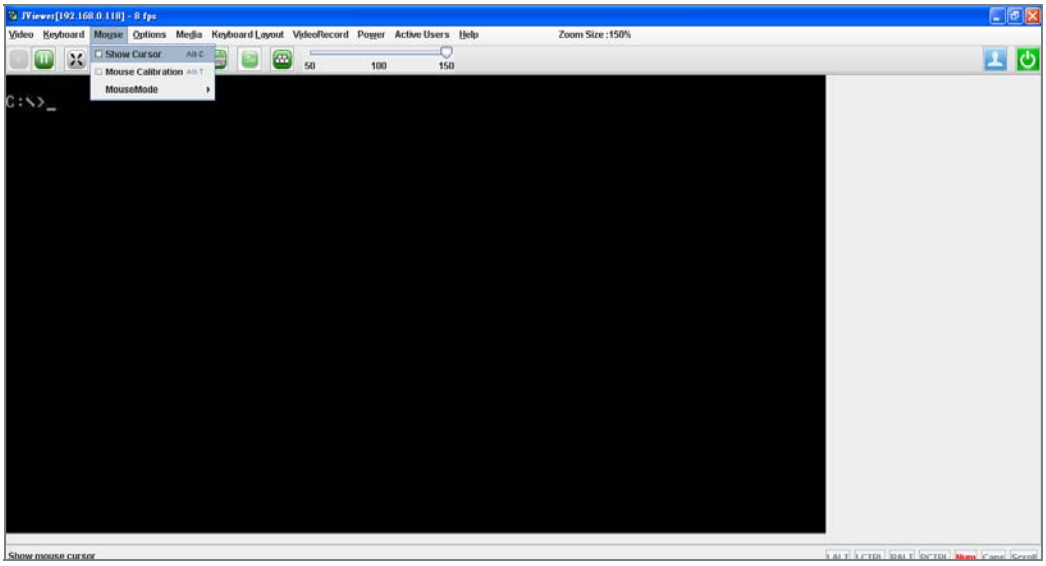
6. Remote Control:


MEGARAC
AIC
admin (Administrator) Refresh Print Logout
Dashboard FRU Information Server Health Configuration Remote Control Auto Video Recording Maintenance HELP
Console Redirection
Press the button to launch the redirection console and manage the server remotely.
Java Console

Environmental setting:



Press "ALT+C" for local and remote OS mouse control switching.



5.4 Updating BMC Firmware

1. **Boot to the DOS (MS-DOS or Free DOS is workable)**
2. **Enter BMC firmware directory [XXXXXZYY]; XXXXX: project name ; YY: firmware version; Z: Identify character, C for official, B for Beta.**
3. **Execute a.bat batch file to update the BMC firmware**

   Example:

   A:>cd SB301C01

   A:\ SB301C01>a.bat

   This is just an example. The latest BMC firmware version is available from the FAE or AIC website.

4. **After update BMC firmware, please power off and then power on system.**

NOTES:

1. DO NOT USE EMM386 IN DOS ENVIRONMENT WHEN UPDATING FIRMWARE OR YOU WILL GET A FAIL.

2. IN SOME CRITICAL CONDITION, AFTER UPDATING BMC FIRMWARE OR CONFIG FILE, YOU MIGHT NEED TO UNPLUG AC POWER CORD 5 SECONDS AND THEN PLUG AC POWER CORD TO RESET BMC, THEN UPDATED NEW FUNCTION CAN WORK PROPERLY.

Chapter 6.

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Note